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THE PROFITABILITY OF THE U.S. SHIPBUILDING INDUSTRY 1947 -1976

Edward M. Kaitz
June 20, 1978

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Profit 76 alleged that the profitability of the U.S. shipbuilding industry was less than satisfactory. This study confirms that finding, but sets far different parameters around the problem. The examination of 30 years of industry performance reveals a two-tiered industry. One group of firms is profitable. The other consistently sustains losses. It also appears that "oldline" shipbuilding firms faired better than newer aerospace oriented entrants →

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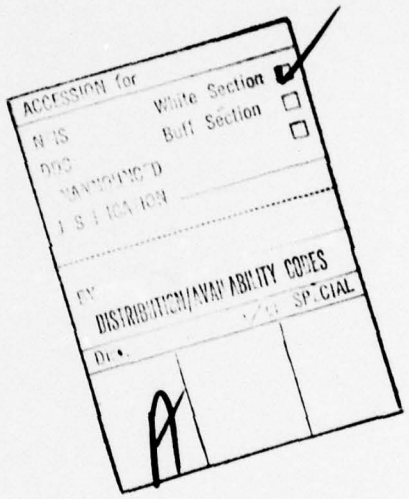
20. oriented entrants into the industry. Firms who maintained a conservative posture towards sales growth and capital investment also performed well. Furthermore, no evidence could be found that Navy construction was any more or less profitable than commercial construction. This suggests that there is a critical need to distinguish between the economics of industry performance and the performance of individual companies. For a firm's profitability may be more a function of the quality of its management than it is of the general economic environment in which it operates.



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CHAPTER I: EXECUTIVE SUMMARY

CONCLUSION

The purpose of this report is to investigate the profitability of the U.S. shipbuilding industry for the thirty year period from 1947 through 1976. The impetus for this study came from Profit 76 which alleged that the shipbuilding industry was the least profitable segment of our Defense Industrial Base. This earlier report also suggested that the Defense Industrial Base was, in turn, less profitable than other segments of our economy. Based on our data, Profit 76 appears to be at least partially correct. As shown in Exhibit I, the eleven companies comprising our sample had sales of approximately $21,800,000,000 and earned profits of $37,100,000 or only 1/6th of 1% of sales for the ten years ending in 1976. Profit 76 reported pretax profits of 2.9% and 3.5% for government and commercial sales respectively, but for a shorter time period and for a smaller segment of the industry. In addition, Profit 76 did not aggregate industry profit and losses but reported them separately. As shown in Table I, our eleven company sample accounted for 66.7% of the industry's sales for the period and includes all but one of the larger firms within the industry (Bethlehem Shipbuilding Company). Because of the longer time period covered and the more complete representation of the industry, we believe that our data base is the more appropriate one from which to draw generalizations on the industry's performance.

Perhaps the most significant finding of this study is that the industry is, and has long been, two-tiered. As shown in Exhibit I and subsequent exhibits, one group of companies has been consistently profitable for at least thirty years. Another group has, almost as consistently, sustained losses. Since the two-

TABLE 1

Sample Group Sales Compared to Industry Sales as Reported by the Federal Trade Commission, 1967 through 1976

(Dollars in 000,000)

	(1) Sample Group	(2) FTC (3731)	(1÷2) Percentage
1967	$1252	$2315	54.1%
1968	1390	2336	59.5
1969	1576	2405	65.5
1970	1733	2562	67.6
1971	1718	2632	65.3
1972	1719	3097	55.5
1973	2268	3835	59.1
1974	2639	4409	59.9
1975	3532	4502	78.5
1976	3698	5235	70.6
	$21300	$32728	66.7%

tiered nature of the industry has a thirty year history, the use of aggregated data in the industry may be misleading.[1]

Of almost equal significance is the finding that the "old line" shipbuilding firms faired better profitwise than the newer, aerospace oriented entrants into the industry. General Dynamics (Quincy), Lockheed, and Litton account for the bulk of the industry's losses after 1966.[2] Of the old line firms, only Todd Shipbuilding sustained a large loss (1975). Unlike the aerospace group, however, this loss was realized on commercial as opposed to Navy contracts. Conversely, even some of the more profitable old line companies sustained episodic losses in the ten years ending in 1976 suggesting critical instabilities within the industry after 1967.[3]

Policywise, it would appear that those companies which maintained a conservative posture on sales growth coupled with nominal but consistent reinvestments in new plant and equipment did better financially than those firms that sought after rapid growth. In shipbuilding, small appears to be beautiful. This follows, in our opinion, from the fact that the industry historically has been comprised of small to medium-sized, thinly capitalized firms.

Last, there is no direct and conclusive evidence at this time that Navy construction is anymore or less profitable than commercial construction. At best, it can be shown that it is more profitable to construct non-combatants for the Navy than combatants. The profit deterioration incurred by Newport News and Bath Iron Works, both of whom are combatant oriented, appears to directly support this contention. The enhanced profitability of firms such as Nassco who construct non-combatants represents the reverse side of the coin.

In summary, then, industry profits are less than satisfactory irrespective of the measures used. The unanswered question at this time is whether their lackluster performance is due to the underlying economics of the U. S. shipbuilding industry or due to the

EXHIBIT I: Industry sales and profit after tax and related financial data by periods 1947 through 1976 - (Dollars in 000,000's)

	# OF FIRMS	SALES	PROFIT	AVERAGE		PROFIT TO (%)		
				NET WORTH	FIXED ASSETS (NET)	SALES	NET WORTH	FIXED ASSETS (NET)
1947 to 1956 Inclusive	10 [1]	$ 3,970.3	$ 154.0	$ 164.4	$ 55.5	3.9	9.4	27.8
1957 to 1966 Inclusive	9 [2]	6,821.4	154.3	226.5	109.1	2.3	6.8	14.2
1967 to 1976 Inclusive	11 [3]	21,799.9	estimate 37.0	unknown	unknown	0.2	unknown	unknown
1967 to 1976 Inclusive Profitable firms	7 [4]	11,021.0	276.1	estimate [6] 300.0	300.2 [7]	2.5	estimate 9.0	estimate 9.2
1967 to 1976 Inclusive Loss firms	4 [5]	10,778.9	(239.1)	unknown	unknown	(2.2)	unknown	unknown

[1]
Avondale
Bath
Newport News
Todd
Electric Boat (1947-52)
Litton
American (1950-56)
Nasco
Maryland
New York
Alabama

[2]
Avondale
Bath
Newport News
Todd
Litton
American
Maryland
New York
Alabama

[3]
Avondale
Bath
Newport News
Todd
Electric Boat
Litton
Nasco
Lockheed
Sun
American
Alabama

[4]
Avondale
Bath
Newport News
Nasco
Sun
American
Alabama

[5]
Todd
Litton
Lockheed
General Dynamics

[6] Includes Bath and Newport News estimated at $32.6 and $137.0 respectively. Data on other companies known.

[7] Includes Bath and Newport News estimated at $15.0 and $110.0 respectively. Data on other companies known.

inadequacies of specific companies within the industry. Our analysis would tend to support the conclusion that a firm's profitability is more a function of the quality of management than it is of the general economic environment in which the industry operates.

HISTORICAL FRAMEWORK

In order to complete our analysis, we selected three time frames for review:

- o 1947-1956
- o 1957-1966
- o 1967-1976

The choice of these three time periods is not arbitrary. Our early reviews of the data suggested a rather stable industry from 1947 through 1956, if profitability is used as the criterion. The impact of the Korean War is reasonably evident (profits up) as is the lack of any defined or concerted foreign competition. During this period, none of the companies lost money, and sales growth appears to be stable.

After 1957, however, sales growth becomes more volatile and operating losses of significance begin to appear. Taken together, these two factors suggest that competition within the industry during these ten years was less than orderly. Although we believe this to be due to the growth of foreign competition, the lack of a national commitment to the shipbuilding industry, and the growing complexity of the ships then being ordered by the Navy, no direct evidence of this is available. Our conclusions here are based solely on an interpretation of the available data, a review of industry oriented literature, and discussions with knowledgeable Navy and industry personnel.[4/]

These conclusions appear to be justified by the industry's performance after 1966. The ten years from 1966 on are characterized by rapid sales growth and extreme volatility profit-wise. After 1966, some of the major firms within the industry sustained significant, operating losses. Other firms earned profits which, based on prior history, appear to be substandard. Conversely, some previously marginal firms showed substantial gains in profitability reflecting, on one hand, the increased demand for ships generated by Navy acquisition programs and the Maritime Acts of 1970 and, on the other hand, the lack of an orderly environment within the industry. Last, after 1968, there were major changes in the capital investment policies implemented by the industry, further affirming the major structural changes within the industry that began with the takeover in the mid to late 1960s by the conglomerates of significant segments of the industry. (Data on the conglomerates is presented in Appendix A.)

THE DATA BASE: 1947-1976

The data base used in this study included the following firms for the period shown:

o	Avondale	(1947-1976)
o	Litton/Pascagoula	(1947-1976)
o	Bath Ironworks	(1947-1976)
o	Maryland Drydock	(1947-1972)
o	Sun Shipbuilding	(1947-1976)
o	American Shipbuilding	(1950-1976)
o	Newport News	(1947-1976)
o	Nassco	(1947-1976)
o	Alabama	(1947-1976)
o	Todd	(1947-1976)
o	New York Shipbuilding	(1947-1969)
o	Electric Boat	(1947-1952)
o	General Dynamics	(1968-1976)

Avondale, Sun, Todd, Litton and Nassco provided the project staff with proprietary data some of which was also available from

public sources. The data on the other companies were derived from public documents, primarily the Dow-Jones archives. Supplementary data were taken from publicly available annual reports, S.E.C. documents, and that portion of a company's financial history routinely available from the Renegotiation Board under the provisions of the Freedom of Information Act. (See Appendices B and C for data on Newport News and General Dynamics, respectively.)

With the exception of Newport News, Lockheed, Bath Ironworks, and General Dynamics (both Quincy and Electric Boat), the reporting base for each of the companies is reasonably consistent from 1947 through 1976. The data on Newport News and Bath lost consistency after they were acquired by conglomerates in the 1960's. The data on Electric Boat and G.D./Quincy is tenuous from 1953 on. Data on Lockheed is at best sketchy. Because of this, we have had to make some extrapolations of data; i.e., we derived post-tax earnings for these companies by applying a 50% tax rate to reported pre-tax income. Although this serves to provide some distortions to the data on the individual company, we do not believe that it otherwise invalidates our conclusion on profit trends either within the company or within the industry. With profits a mere $37,000,000 or 1/6th of 1% of sales any upward adjustment of $200,000,000 would not otherwise alter the overall conclusions on industry profitability set forth earlier in this report.

Last, 1947 is used as the starting point in this study because it appeared on inspection to be the first normal postwar year for the industry. The study was carried forward to 1976 on the assumption that our ultimate concern was with the current condition of the industry. We sought the historical data for comparative purposes only. This data, however, proved useful in providing insights to what may well be termed the "normal profits" earned within the industry, the cyclicality of these profits, and those profit driving factors that impact the industry. These will be discussed later in this report.

DATA BASE: EXHIBITS I, II AND III

As noted earlier, after 1966 public data only on sales and profits before taxes, interest, and other unspecified charges was available for Newport News, General Dynamics. Bath Ironworks, and Lockheed. Exhibit II presents data for these firms for the years after 1966 as derived from published annual reports and the 10-K forms filed with the S. E. C. Much of this data was later checked for consistency, in order to avoid gross misinterpretations. The data subsequently were corrected for a 50% tax rate. Although we recognize the shortcomings of so arbitrary an approach, we do not believe that it distorts significantly the profit/sales ratio reported earlier.

Exhibit III then combines the data from these four companies in summary form and relates this to the data on the seven companies for which we have complete data. This then confirms the data on industry profit set forth in Exhibit I. Because of the commitment to corporate confidentiality made to a number of the firms, disaggregated data for each of the seven companies cannot be made available publicly. However, this data is in the possession of the study group and was used to verify the figures set forth in Exhibit I.

Exhibit IV then presents data on the industry's performance for the three time periods analyzed in this report. Bath, Newport News, Electric Boat (1947 - 1952) and G. D. both Quincy and Electric Boat, (1967 - 1976), and Lockheed are specifically identified. The remaining nine companies for whom we had complete data are, once again not identified. In order to assure confidentiality, sales, net worth, and profit figures have been indexed. Two of the companies either exitted the industry after 1966 or lost their corporate identity and are, therefore, not included in our analysis for the 1967/76 time frame.

EXHIBIT II: Sales and after tax profits, four companies 1967 to 1976 - (Figures in 000,000)

YEAR	NEWPORT		BATH		G.D./ELECTRIC BOAT		LOCKHEED		TOTAL	
	SALES	PROFITS	SALES	PROFITS	SALES	PROFITS	SALES	PROFITS	SALES	PROFITS
1967	$ 305.3	$ 3.3	$ 66.1	$ 0.7	$ 279.4	$unknown	$127.9	$unknown	$ 778.7	$ 4.0
1968	97.6	2.2	60.8	2.0	276.5	(46.3)	79.0	unknown	513.9	(42.1)
1969	314.1	10.8	52.4	2.0	296.4	(48.3)	80.0	unknown	742.9	(35.5)
1970	359.7	14.7	43.1	2.0	372.4	2.7	110.0	(28.0)	885.2	(8.6)
1971	380.8	11.7	58.9	2.9	351.0	(3.6)	113.0	0.5	903.7	11.5
1972	462.3	8.4	58.3	3.0	320.7	1.7	96.0	(0.5)	937.3	12.6
1973	477.9	2.9	83.0	1.5	368.9	3.4	53.0	(7.5)	982.8	0.3
1974	490.4	5.4	106.8	(5.4)	533.1	0.4	60.0	(8.5)	1,190.3	(8.1)
1975	613.5	15.1	125.9	0.5	755.1	1.7	107.0	(11.0)	1,601.5	6.3
1976	688.2	20.2	114.7	1.0	1,043.9	3.8	120.0	unknown	1,966.8	25.0
Adjustment	-	-	-	3.5*	-	-	-	-	-	3.5
Total	$4,189.8	$94.7	$770.0	$13.7	$4,597.4	$(84.5)	$945.9	$(55.0)	$10,503.1	$(31.1)

* Claim settlement reported in annual report but not carried into profit and loss statement.

EXHIBIT III: Sales and after tax profits for eleven companies, 1967 through 1976 - (Figures in 000,000's)

YEAR	SEVEN COMPANIES		SEVEN COMPANIES		TOTAL SAMPLE	
	SALES	PROFITS	SALES	PROFITS	SALES	PROFITS
1967	$ 746.5	$ 1.9	$ 778.7	$ 4.0	$ 1,525.2	$ 5.9
1968	876.1	(1.2)	513.9	(42.1)	1,390.0	(43.3)
1969	833.7	0.9	742.9	(35.5)	1,576.6	(34.6)
1970	847.5	23.5	885.2	(8.6)	1,732.7	14.9
1971	814.2	6.3	903.7	11.5	1,717.9	17.8
1972	782.5	8.4	937.3	12.6	1,719.8	21.0
1973	1,285.9	10.7	982.8	0.3	2,268.7	11.0
1974	1,449.0	10.9	1,190.3	(8.1)	2,639.3	2.8
1975	1,930.0	(24.0)	1,601.5	6.3	3,531.5	(17.7)
1976	1,731.4	30.7	1,966.8	25.0	3,698.2	55.7
Adjustment	-	-	-	3.5	-	3.5
Total	$11,296.8	$68.1	$10,503.1	$(31.1)	$21,799.9	$ 37.0

Source: Exhibits I, II, and company confidential data.

EXHIBIT IV: Period sales, after tax profit, net worth, and related financial data, 13 companies 1947 through 1976 - (Figures in 000,000's)

	BATH	NEWPORT NEWS	ELECTRIC BOAT	LOCKHEED	(1) A	(1) B	(1) C	(1) D	(1) E	(1) F	(1) G	(1) H	(1) I
Avg. Sales:													
1947 - 1956	$32.3	$105.6	$ 64.3	$unknown	$,100.0	$100.0	$100.0	$100.0	$ 100.0	$100.0	$100.0	$100.0	$ 100.0
1957 - 1966	51.0	226.9	unknown	64.6	370.0	157.0	145.0	202.0	530.0	126.0	165.0	138.0	138.0
1967 - 1976	77.0	418.9	459.8	94.6	1,543.0	291.0	609.0	542.0	2,122.0	*	*	270.0	289.0
Avg. Net Worth:													
1947 - 1956	$13.3	$ 38.1	$ 10.3	unknown	$ 100.0	$100.0	$100.0	$100.0	$ 100.0	$100.0	$100.0	$100.0	$ -
1957 - 1966	23.9	69.0	unknown	unknown	319.0	116.0	98.0	146.0	48.0	142.0	139.0	144.0	100.0
1967 - 1976	32.6 est.(2)	137.0 est.(2)	unknown	unknown	883.0	123.0	77.0	370.0	1,095.0	*	*	220.0	160.0
Avg. Profits:													
1947 - 1956	$ 1.3	$ 5.1	$ 2.1	unknown	$ 100.0	$100.0	$100.0	$100.0	$ 100.0	$100.0	$100.0	$100.0	$ 100.0
1957 - 1966	2.3	7.2	unknown	unknown	270.0	108.0	(15.0)	175.0	400.0	760.0	(17.0)	88.0	60.0
1967 - 1976	1.4	9.5	(8.5)	(5.5)	500.0	(185.0)	(543.0)	625.0	3,800.0	-	-	238.0	720.0
Avg. Return On Sales After Tax:													
1947 - 1956	4.0%	4.8%	10.3%	unknown	5.8%	2.0%	2.6%	2.8%	1.7%	5.3%	1.8%	5.3%	1.5%
1957 - 1966	4.5	3.2	unknown	unknown	4.3	1.4	(0.2)	2.4	1.3	2.9	0.2	3.4	0.6
1967 - 1976	1.8	2.3	(1.8)	(5.8)	1.9	(1.3)	(2.3)	3.2	3.0	*	*	4.7	3.8
Avg. Return On Net Worth After Tax:													
1947 - 1956	9.7%	12.6%	10.3%	unknown	24.4%	3.4%	13.4%	5.2%	4.8%	12.7%	4.2%	11.4%	unknown
1957 - 1966	9.6	10.4	unknown	unknown	20.6	3.2	(2.0)	6.3	40.0	6.3	(0.7)	6.9	1.9
1967 - 1976	4.3	7.0	unknown	unknown	13.9	(5.1)	(95.0)	8.9	16.5	*	*	12.4	14.1

(1) and net worth indexed for confidentiality.

(2) Based on full retention of earnings for 1967 - 1976 with no additional corporate investment.

* No longer identifiable as a separate corporation.

It is this particular Exhibit which formed the basis for our earlier conclusion on the two-tiered nature of the industry. Of especial interest is the improved profitability experienced after 1967 by a number of the smaller, "old-line" shipbuilding firms (Companies A, D, E, H, and I).

In our opinion the enhanced profitability of these medium-sized firms can be attributed to the increased demand for commercial vessels generated by the Maritime Acts of 1970. In other words, the industry performed in consonance with conventional economic theory; an increase in demand created the environment for increased sales and profits. Conversely, the two successful Navy oriented firms, Bath and Newport News, show what now appears to be a significant deterioration in their performance. The lower rates of return on invested capital reported by companies A and E can be explained by the increased capital generated by earned but undistributed profits. In absolute terms, the profit performance of both of these firms was outstanding.

Since the smaller firms noted above were involved in the construction of naval non-combatants, whereas Bath and Newport News construct combatants only, the data in Exhibit IV forms the basis for our earlier conclusion on the greater profitability of naval non-combatants vis-a-vis combatants.

SUMMARY STATEMENT

Exhibit I, then, provides summary data on the profits of the U. S. shipbuilding industry for the past thirty years. The deterioration in the industry since 1967 is obvious from an analysis of the data. However, a number of points need to be emphasized:

1. The data for 1946-1967 is internally consistent. During this period, most shipbuilding firms were independent companies and reported as such. With the exception of Avondale and Litton, both of whom provided proprietary data, our analysis for this twenty year period rests on data obtained from public records.

2. Industry sales grew rapidly from the 1947/56 period to the 1957/66 period. Profits, however, remained relatively constant. This is due to two factors: first, two companies who were otherwise profitable from 1947 to 1956, sustained operating losses during these years providing a downward bias to the industry's performance. Second, the average return on sales for all companies decreased, apparently as the result of enhanced competition within the industry. The impact on the individual firm within the industry, however, was not evenly spread. Some profitable companies maintained or even improved on their earlier performance whereas others showed lesser returns on equity.

3. Industry sales jumped dramatically after 1967 reflecting a number of factors; the larger size of the vessels then being constructed, the greater complexity of combatants, and inflation. Sales growth is most marked after 1972. Starting with 1970 or 1971, the structure of the industry appears to have undergone yet another significant change. The industry is now dominated by three large firms (Newport News, General Dynamics, Litton) only one of which has had a long and successful career as a shipbuilder. All of these are conglomerate owned companies.

4. Profit-wise the industry has become two-tiered most of the companies that remained profitable throughout the thirty years under review appear to have done as well, if not slightly better, from 1967 to 1976 than from 1957 to 1966. Two of the companies who lost money (General Dynamics-Quincy and Lockheed) can be regarded as new entrants into the industry. The other two companies

(Todd and Litton) have had a long history of volatile sales and inadequate profits.

Thus, Exhibits I through IV confirm the conclusions reached in Profit 76 on the profitability of the shipbuilding industry but set far different parameters around the problem. This is because Profit 76 reviewed data for five years only. Substantial losses were incurred in 1968 and 1969 by General Dynamics/Quincy and Lockheed. These years are not covered by the data used in Profit 76. On balance, the industry did better after 1970 than before, although not substantially enough to offset the earlier losses sustained by Lockheed and General Dynamics/Quincy.

In addition, the sample used in Profit 76 was equally constricted. Full data was available only for General Dynamics/Quincy, Newport News Shipbuilding, and Norfolk Shipbuilding and Drydock Company. More limited data was available for Litton/Pascagoula and Lockheed. We would now maintain that General Dynamics/Quincy, Litton and Lockheed are "special cases" such that any inordinate reliance on data from these firms may well provide misleading results. By using a larger sample and a longer time period in our analysis, we hoped to provide a fuller analysis of the industry than that set forth earlier in Profit 76 or by other more recent reports on the industry.

As noted earlier, and based on data to be presented in subsequent sections of this report, we believe that there is a critical need to distinguish between the economics of the industry and the performance of the individual companies. Although it is easy to allege that the economics of the shipbuilding industry are less than satisfactory, an equally cogent argument can be developed which suggests that a firm's profitability is more a function of the quality of its management than it is of the general economic environment in which it operates.

Evidence in support of this contention is provided in later sections of this report and in particular through an analysis of six companies most vital to the Navy's shipbuilding base.

CHAPTER I: FOOTNOTES

1. It should be noted here that there is no logical reason for expecting an industry to be uniformally profitable or profitless. Virtually every industry has a group of firms who out perform others in the industry; e.g., General Motors vs. Chrysler. The presumption in the defense industry is that acquisition techniques and competition will induce more similarities between firms than disparities. This result has not been obtained in the shipbuilding industry. Of more central concern to this study is why certain low-profit firms failed to leave the industry in the late 1940s and 1950s. We could find no satisfactory explanation for this behavior although the operating results of some firms would have suggested the wisdom of divestiture. In a sense, the low level of incremental capital investments made by some of these firms from 1947 through 1970 should be regarded as evidence of a slow divestiture process. But for the expectations of a 50 to 100 ship construction program generated by the Fast Deployment Logistics ship project, many of the companies might have otherwise dropped out of the industry. The evidence suggests that G.D./Quincy and Lockheed were stimulated to invest substantial sums of money in ship building facilities because of the F.D.L. program which, unfortunately, failed to become a reality. Much of this is discussed in 15 December 1965 presentation by the United States Industrial Association and the Navy entitled in Fast Deployment Logistics ship project.

2. General Dynamics poses a special problem in that it is the successor to the Electric Boat Company. This subsidiary still maintains its own identity in the shipbuilding (submarine) industry. G. D./Quincy was acquired in 1968 from Bethlehem Steel and also maintains its own identity in the shipbuilding (surface ship) industry. Where possible, these two firms although subsidiaries of this same parent, will be identified separately, e.g. G.D. (Quincy).

3. We regard the episodic losses sustained by the normally profitable firms within the industry as a sign of a critical instability within the industry. Some of the instabilities have roots in the way that the Navy now contracts with its privately owned yards. Other instabilities were generated by the unfunded F.D.L. program for which a number of firms built or modified facilities. Last, the failure of Marad '70 to generate the predicted demand for commercial vessels has served to destabilize the industry by apparently inducing heavy investments in new facilities for which there is now no predictable use given current federal policy.

4. Among the obvious factors, increasing the complexity of Naval combatants is the switch from conventional to nuclear power. Less obvious, but equally important, is the increased complexity of shipboard weapon systems, virtually all of which are computer controlled. The back-up systems for the weapons suite requires extremely complex design and construction procedures not heretofore contemplated by the shipbuilding industry.

CHAPTER II: INDUSTRY PROFITABILITY: AN HISTORICAL PERSPECTIVE

INTRODUCTION

A number of factors inhibited the data gathering segment of this project.

1. Because the shipbuilding industry has never been a major factor in our economy, there has been no prior attempt to our knowledge to gather and analyze complete data on the financial operations of the industry. At war's end, only Todd and Newport News were large enough to warrant inclusion in the Fortune 500. By 1965 only Newport News would have been included in this select group. Both at the war's end and in 1965, the remaining companies in the industry were small to medium sized firms that apparently attracted little attention from the financial community. Those that were not independent firms--Bethlehem and Sun--were in turn subsidiaries of large corporations such that there was no requirement that they report their operating results separately.

2. With the takeover of major segments of the industry by the conglomerates in the late '50s and mid '60s, the financial identity of the shipbuilding industry became even more obscured. Line of business reporting was not required until 1972. Although better than nothing, current SEC regulations require only that the contribution of the subsidiary to the parent's sales and pre-tax profits be reported. Details on the assets assigned to a subsidiary, charges for corporate overhead, and other financial details critical to a complete analysis of an industry need not, and are not, disclosed. Because of this, little direct attention appears to have been paid the shipbuilding industry by the financial community.

3. Adding to this complexity is the "reporting format" problem. Accounting problems are created by the long time period involved in the construction of a ship. Depending on need and purpose, sales and profits can be reported either on a percent of completion basis or a completed ship basis. Although both reporting systems should equalize out over an extended period of time, distortions can appear within shorter time frames. In addition, reports using differing but nonetheless generally accepted accounting practices may be filed with different federal or public agencies. Some yards, for example, report to the public on percentage of completion basis and to the Renegotiation Board on a completed ship basis only. Because of the continuing flow of work in and out of a shipyard...and the high value of unit output... critical disjunctures in data are often created. We have attempted to treat these problems as equitably as possible in the data, but recognize that certain interpretative errors may have been made. We hope to correct these in future reports. Despite the above, however, we still believe that useful generalizations on the financial structure of the industry can be made.

Perhaps the most striking fact about the industry is that despite the massive output of our WWII shipbuilding base, the firms that apparently elected to remain in the industry after the war were relatively small when measured in terms of sales, profits, and invested capital. Our first overview of the financial operations was gained from an analysis of eleven firms within the industry for the 20 year period beginning in 1947 and ending in 1966 (Exhibits V through IX).

Exhibit V presents summary data on the industry for the twenty year period ending in 1966. As shown in this exhibit, the "average" shipbuilding firm in 1947 had sales of only $32,000,000, a net worth of only $13,000,000, and but $1.1 million in after tax

profits. However, there were substantial and significant variations around these figures.

Sales in 1947 (Exhibit VI) varied from a low of $3.5 million to a high of $69.1 million.

Net worth in 1947 (Exhibit VII) varied from a low of less than $1.0 million to a high of $35 million.

Investments in 1947 in fixed assets (Exhibit VIII) shows a similar distribution; from a low of $500,000 to a high of $13 million.

Last, profits in 1947 (Exhibit IX) ranged from a loss of $1 million to a high of $5,200,000.

2. As might be expected in an intensely competitive, labor intensive industry, profit rates on sales and invested capital varied widely between companies (Exhibit IV).[1/] The evidence thus suggests a two-tiered industry: companies with consistent and reasonably satisfactory returns on sales and invested capital, and a second group with highly volatile rates of return. As would be expected in a "job shop" industry, there seems to be no direct relationship between changes in sales and changes in profits. Profits appear to result more from the bidding process than from efficient construction.[2/]

3. From 1947 through 1966, substantial dividends were apparently paid out to stockholders. Net worth at year end 1946 for the ten companies sampled was approximately $118,000,000 increasing to only $254,000,000 by 1966. Post-tax profits for the period, however, were $308,000,000 which would suggest that $173,000,000 in dividends were paid to stockholders in the intervening twenty years. This is a payout ratio of approximately 56%.[3/]

In light of the relatively small sums of money initially invested in the industry, this high a payout appears, at first

EXHIBIT V: Sales after profits and related financial data for eleven companies, sample 1947 to 1956; Nine companies, sample 1957 through 1966 - (Dollars in 000,000's)

NO. OF COS.	YEAR	SALES	NET WORTH	FIXED ASSETS	PROFIT	PROFIT TO (%)			SALES TO (X)		INDEX			
						SALES	NET WORTH	FIXED ASSETS	NET WORTH	FIXED ASSETS	SALES	NET WORTH	FIXED ASSETS	PROFIT
10	1947	$ 321.3	$ 132.9	$ 35.2	$ 11.1	3.5%	8.3%	31.5%	2.4%	9.1%	$100.0	$100.0	$100.0	$100.0
10	1948	355.1	145.6	38.9	22.6	6.3	15.5	58.1	2.4	9.1	110.5	109.6	110.5	203.6
10	1949	277.2	152.7	43.4	13.3	4.8	8.8	30.6	1.8	6.4	86.3	114.9	123.3	119.8
11	1950	220.3	158.8	53.7	4.0	1.8	2.5	7.4	1.4	4.1	68.6	119.5	152.6	36.0
11	1951	350.9	164.0	57.6	15.9	4.5	9.7	27.6	2.1	6.1	109.2	123.4	163.6	143.2
11	1952	574.6	169.7	61.5	17.9	3.1	10.5	29.1	3.4	9.3	178.8	127.7	174.7	161.3
10	1953	450.1	157.3	58.9	16.7	3.7	10.6	28.4	2.9	7.6	140.1	118.4	167.3	150.5
9	1954	452.9	170.2	61.8	16.1	3.6	9.5	26.1	2.7	9.3	140.1	128.1	175.6	145.0
10	1955	519.0	191.7	68.1	17.9	3.4	9.3	26.3	2.7	7.6	161.5	144.2	193.5	161.3
10	1956	448.9	201.5	75.8	18.6	4.1	9.2	24.5	2.2	5.9	139.7	152.1	215.3	167.6
	Total	$3,970.3	$1,644.4	$ 554.9	$154.1	38.8%	93.9%	289.6%	24.0%	74.5%				
	Avg.	$ 397.0	$ 164.4	$ 55.5	$ 15.4	3.9%	9.4%	29.0%	2.4%	7.5%				
9	1957	$ 587.3	$ 203.7	$ 84.4	$ 16.8	2.9%	8.2%	19.9%	2.9%	7.0%	$112.8	$153.8	$239.7	$161.3
9	1958	657.8	213.3	89.5	18.9	2.9	8.9	21.1	3.1	7.3	204.6	161.4	254.3	170.2
9	1959	643.5	226.0	95.1	17.4	2.7	7.7	18.3	2.8	6.8	200.3	169.9	270.2	156.7
9	1960	629.5	222.3	105.1	(3.9)	(0.6)	(1.8)	(3.8)	2.8	6.0	195.6	166.9	298.6	(35.1)
9	1961	694.0	222.9	110.1	12.7	1.8	5.7	11.5	3.1	6.3	215.2	166.9	312.8	114.4
9	1962	646.1	222.8	114.9	12.4	1.9	5.6	10.8	2.9	5.6	201.2	166.9	326.4	111.2
9	1963	655.3	224.5	115.2	14.3	2.2	6.4	12.4	2.9	5.7	204.0	168.8	327.2	127.9
9	1964	716.1	228.7	117.0	18.5	2.6	8.1	15.8	3.1	6.2	223.1	172.2	332.3	166.7
9	1965	705.6	247.2	124.6	23.7	3.4	9.6	19.0	2.9	5.7	219.9	185.7	353.9	213.5
9	1966	886.2	253.9	135.4	23.5	2.7	9.3	17.4	3.5	6.5	276.0	190.9	387.6	211.7
	Total	$6,821.4	$2,265.3	$1,091.3	$154.3	22.5%	67.7%	142.4%	30.0%	63.1%				
	Avg.	$ 682.1	$ 226.5	$ 109.1	$ 15.4	2.3%	6.8%	14.1%	3.0%	6.3%				

EXHIBIT VI: Sales by companies, 1947 through 1966 - (Dollars in 000,000's)

NO. OF COS.	YEAR	A	B	C	D	E	F	G	H	I	J	K	TOTAL
10	1947	$ 5.0	$ 10.6	$ 61.2	$ 69.1	$ 26.9	$ 68.5	$unknown	$ 3.5	$ 28.3	$ 29.3	$ 18.9	$ 321.3
10	1948	9.0	19.5	81.8	83.4	54.5	23.7	"	4.8	33.5	21.7	22.7	355.1
10	1949	6.3	24.4	77.6	59.5	45.2	9.6	"	3.3	14.9	22.6	13.7	277.2
11	1950	5.7	26.4	52.2	33.5	41.8	1.0	7.5	3.0	8.1	31.5	9.7	220.3
11	1951	11.1	32.4	88.9	46.0	82.6	11.7	14.2	5.3	29.1	39.5	12.1	350.9
11	1952	21.3	40.2	147.4	75.7	134.5	8.2	24.2	6.5	38.2	68.4	10.0	574.6
10	1953	26.2	37.8	157.1	78.9	unknown	21.1	18.5	7.1	25.5	65.7	12.2	550.1
9	1954	23.8	44.4	149.5	20.4	"	47.5	15.3	unknown	15.1	73.8	13.1	552.9
10	1955	26.2	42.8	122.5	64.2	"	124.6	9.0	14.1	19.3	78.4	18.0	619.0
10	1956	37.8	44.8	117.8	69.1	"	43.1	11.7	6.7	31.3	66.6	20.0	548.9
	Total	$172.4	$323.3	$1,056.0	$ 649.8	$unknown	$549.1	$ 100.4	$ 54.3	$243.3	$497.5	$150.4	$4,370.3
	Avg.	$ 17.2	$ 32.3	$ 105.6	$ 65.0	$unknown	$ 54.9	$ 14.3	$ 6.0	$ 24.3	$ 49.8	$ 15.0	$ 437.0
9	1957	$ 44.8	$ 46.7	$ 177.6	$ 93.5	$unknown	$ 54.3	$ 23.2	$unknown	$ 43.8	$ 75.5	$ 27.9	$ 587.3
9	1958	31.5	60.1	171.6	93.4	"	106.6	23.7	"	35.5	109.0	26.3	657.8
9	1959	40.2	58.9	191.1	81.5	"	88.4	14.5	"	26.3	124.6	18.0	643.5
9	1960	49.7	53.4	195.5	76.3	"	66.5	26.5	"	29.4	112.1	20.1	629.5
9	1961	43.8	44.6	251.4	107.9	"	62.6	28.5	"	29.7	101.1	25.4	694.0
9	1962	63.3	55.2	267.2	125.2	"	1.5	19.8	"	22.7	72.5	18.5	646.1
9	1963	77.3	52.3	226.4	111.4	"	86.8	22.7	"	22.4	57.3	14.6	655.3
9	1964	102.8	49.7	258.2	99.5	"	75.3	30.3	"	30.3	55.0	15.1	716.1
9	1965	125.1	43.9	275.8	100.2	"	104.0	47.7	"	31.8	65.1	11.9	705.6
9	1966	141.7	44.7	254.1	132.9	"	148.7	52.2	"	35.4	47.6	28.9	886.2
	Total	$635.4	$509.5	$2,268.9	$1,021.8	$unknown	$794.7	$ 289.1	$unknown	$307.3	$819.8	$206.7	$6,821.4
	Avg.	$ 63.5	$ 51.0	$ 226.9	$ 102.2	$unknown	$ 79.5	$ 28.9	$unknown	$ 30.7	$ 82.0	$ 20.7	$ 682.1

EXHIBIT VII: Net worth by companies, 1947 through 1966 - (Dollars in 000,000's)

NO. OF COS.	YEAR	A	B	C	D	E	F	G	H	I	J	K	TOTAL
10	1947	$ 1.3	$ 10.3	$ 25.2	$ 34.9	$ 19.2	$ 10.6	$unknown	$ 0.8	$ 6.3	$ 18.4	$ 5.7	$ 132.9
10	1948	2.4	10.3	28.8	39.6	20.4	9.3	"	1.1	8.8	18.9	6.7	145.6
10	1949	2.5	11.6	33.6	39.4	20.2	7.7	"	1.7	9.8	19.3	6.8	152.7
11	1950	2.7	12.3	36.2	35.7	19.8	7.7	9.0	2.0	9.6	16.9	6.8	158.8
11	1951	3.2	12.7	36.9	37.4	21.7	7.4	10.8	2.2	10.0	14.8	6.9	164.0
11	1952	3.9	13.1	38.5	38.4	21.0	8.4	11.0	2.3	11.1	15.1	7.0	169.7
10	1953	4.6	13.7	40.8	39.1	unknown	9.4	11.3	2.4	11.8	17.0	7.2	157.3
9	1954	5.8	14.7	44.2	38.3	"	11.4	11.1	unknown	11.7	25.4	7.3	170.0
10	1955	6.5	16.2	47.2	39.1	"	15.2	11.4	3.1	11.4	34.0	7.5	191.2
10	1956	8.3	18.2	49.3	39.8	"	16.7	10.3	3.1	11.9	35.9	8.0	201.5
	Total	$ 41.2	$133.1	$380.9	$381.7	$ 122.3	$103.8	$ 75.9	$ 18.7	$102.4	$215.7	$ 69.9	$1,644.4
	Avg.	$ 4.1	$ 13.3	$ 38.1	$ 38.2	$ 20.4	$ 10.4	$ 7.6	$ 2.1	$ 10.2	$ 21.6	$ 7.0	$ 164.4
9	1957	$ 8.5	$ 19.7	$ 51.6	$ 42.7	$unknown	$ 12.4	$ 10.3	$unknown	$ 13.0	$ 37.0	$ 8.5	$ 203.7
9	1958	10.2	20.5	55.1	43.8	"	10.5	9.7	"	14.3	39.8	9.3	213.3
9	1959	12.2	21.6	59.0	45.3	"	11.2	9.9	"	15.1	41.9	9.8	226.0
9	1960	10.2	23.6	63.2	43.1	"	12.6	11.1	"	15.4	32.9	10.2	222.3
9	1961	10.8	24.3	67.2	44.9	"	15.1	11.5	"	15.4	23.3	10.4	222.9
9	1962	12.3	26.1	71.2	43.4	"	5.5	11.2	"	15.1	23.4	10.6	222.8
9	1963	14.0	26.1	75.2	43.8	"	6.6	10.6	"	14.3	23.5	10.5	224.5
9	1964	12.2	26.5	78.8	43.9	"	8.7	11.0	"	13.4	23.9	10.3	228.7
9	1965	17.7	27.2	82.8	44.9	"	11.7	12.3	"	13.5	26.6	10.6	247.2
9	1966	23.0	23.8	85.9	46.9	"	7.4	13.5	"	14.1	28.4	11.0	253.9
	Total	$131.1	$239.4	$690.0	$442.7	$unknown	$101.7	$ 111.1	$unknown	$143.6	$300.7	$101.2	$2,265.3
	Avg.	$ 13.1	$ 23.9	$ 69.0	$ 44.3	$unknown	$ 10.2	$ 11.1	$unknown	$ 14.4	$ 30.0	$ 10.1	$ 226.5

EXHIBIT VIII: Fixed assets by company 1947 through 1966 - (Dollars in 000,000's)

NO. OF COS.	YEAR	A	B	C	D	E	F	G	H	I	J	K	TOTAL
10	1947	$ 0.8	$ 1.7	$ 9.0	$ 13.0	$ 2.6	$ 0.5	$unknown	$ 1.0	$ 1.6	$ 4.7	$ 0.7	$ 35.2
10	1948	1.2	2.0	4.6	12.9	2.9	0.5	"	1.0	1.7	4.4	0.7	38.9
10	1949	1.2	2.7	14.7	12.9	4.4	0.4	"	1.0	1.9	4.2	1.0	43.4
11	1950	1.2	3.1	16.1	13.5	6.4	0.4	3.9	1.1	2.2	3.9	1.9	53.7
11	1951	1.9	3.6	16.5	12.7	6.9	0.4	4.8	1.2	3.4	3.7	2.5	57.6
11	1952	2.4	3.9	18.2	11.9	6.8	0.8	4.9	1.5	4.2	4.3	2.6	61.5
10	1953	3.3	3.8	19.7	11.7	unknown	1.4	4.8	1.5	4.7	5.3	2.7	58.9
9	1954	3.7	4.0	20.0	11.0	"	2.0	5.4	unknown	5.2	7.4	2.7	61.8
10	1955	4.1	4.3	20.3	11.7	"	2.6	4.9	2.7	5.2	9.2	3.1	68.1
10	1956	5.1	5.3	21.2	12.5	"	3.9	4.8	2.3	6.0	11.6	3.1	75.8
	Total	$24.9	$35.4	$167.3	$123.2	$unknown	$12.9	$ 33.6	$ 13.3	$36.1	$ 58.7	$21.0	$ 554.4
	Avg.	$ 2.5	$ 3.5	$ 16.7	$ 12.3	$unknown	$ 1.3	$ 4.8	$ 1.5	$ 3.6	$ 5.9	$ 2.1	$ 55.5
9	1957	$ 5.7	$ 6.0	$ 23.0	$ 13.5	$unknown	$ 5.5	$ 4.6	$unknown	$ 6.9	$ 14.1	$ 3.1	$ 84.4
9	1958	5.6	6.0	26.4	15.1	"	7.1	5.1	"	7.0	13.9	3.3	89.5
9	1959	6.3	6.0	29.2	15.3	"	9.4	4.7	"	6.9	14.1	3.2	95.1
9	1960	9.4	6.0	30.1	18.1	"	8.7	8.9	"	6.7	14.1	3.1	105.1
9	1961	9.2	6.1	32.3	18.3	"	10.0	9.8	"	6.7	13.1	4.6	110.1
9	1962	9.0	6.2	37.3	18.5	"	9.8	9.0	"	6.7	12.5	5.9	114.9
9	1963	9.6	6.1	39.9	18.1	"	10.2	7.5	"	6.5	11.4	5.9	115.2
9	1964	11.0	6.5	40.1	17.1	"	11.8	7.6	"	6.3	10.6	6.0	117.0
9	1965	12.4	7.1	41.0	19.5	"	13.6	8.3	"	6.3	10.6	6.0	124.6
9	1966	14.1	8.9	43.7	23.0		14.3	8.2		7.0	10.0	6.2	135.4
	Total	$92.3	$64.9	$343.0	$176.5	$unknown	$99.9	$ 73.7	$unknown	$76.0	$124.4	$47.3	$1,091.3
	Avg.	$ 9.2	$ 6.5	$ 34.3	$ 17.7	$unknown	$10.0	$ 7.4	$unknown	$ 7.6	$ 12.4	$ 4.8	$ 109.1

EXHIBIT IX: Profits by company 1947 through 1966 - (Dollars in 000,000's))

NO. OF COS.	YEAR	A	B	C	D	E	F	G	H	I	J	K	TOTAL
10	1947	$ 0.4	$(1.4)	$ 5.2	$ 1.0	$ 0.6	$ 0.2	$unknown	$ (0.5)	$ 3.0	$ 0.8	$1.0	$ 11.1
10	1948	1.2	0.6	7.8	4.0	2.1	1.3	"	0.2	2.5	1.0	1.9	22.5
10	1949	0.3	0.8	8.2	1.4	0.4	0.4	"	0.0	0.6	0.7	0.6	13.3
11	1950	0.4	1.1	2.3	(2.9)	1.4	0.03	0.2	0.5	(0.3)	(4.5)	0.3	4.0
11	1951	0.7	1.2	3.4	2.1	3.9	0.5	0.3	0.1	2.0	1.2	0.6	15.9
11	1952	0.9	1.4	3.9	2.6	4.9	1.8	1.1	0.2	1.6	(0.2)	0.5	17.9
10	1953	0.9	1.5	5.2	2.0	unknown	1.0	0.7	0.1	1.4	3.2	0.7	16.7
9	1954	1.4	2.3	7.2	0.3	"	1.4	0.6	unknown	0.2	2.4	0.4	16.1
10	1955	1.0	2.6	4.8	1.0	"	4.7	0.1	0.3	0.5	1.8	1.1	17.9
10	1956	1.9	2.8	3.4	1.8	"	2.5	0.6	0.5	1.3	2.9	0.8	18.6
	Total	$10.1	$12.9	$51.4	$13.3	$ 13.3	$13.8	$ 3.6	$ 1.4	$12.8	$ 9.3	$7.9	$154.0
	Avg.	$ 1.0	$ 1.3	$ 5.1	$ 1.3	$ 2.2	$ 1.4	$ 0.4	$ 0.1	$ 1.3	$ 0.9	$0.8	$ 15.4
9	1957	$ 2.3	$ 2.1	$ 6.4	$ 4.7	$unknown	$(4.3)	$ 1.0	$unknown	$ 1.9	$ 2.8	$1.6	$ 16.8
9	1958	2.0	2.1	6.7	2.8	"	(2.0)	(0.8)	"	2.1	4.7	1.2	18.9
9	1959	2.5	2.6	7.8	0.4	"	1.4	0.3	"	0.7	0.7	1.0	17.4
9	1960	0.8	2.4	7.9	(1.0)	"	1.5	1.3	"	1.1	(18.0)	0.03	(3.9)
9	1961	1.4	2.3	7.0	1.3	"	(0.6)	0.5	"	0.2	0.1	0.4	12.7
9	1962	2.2	1.4	8.2	0.5	"	(0.2)	(0.3)	"	0.4	0.7	0.5	12.4
9	1963	2.4	1.2	7.3	1.4	"	1.6	0.3	"	(1.0)	1.0	0.1	14.3
9	1964	2.9	1.3	7.6	1.2	"	2.1	0.4	"	1.1	1.6	0.06	18.5
9	1965	5.6	0.9	8.0	0.0	"	2.9	1.4	"	1.3	2.6	1.0	23.7
9	1966	5.2	6.7	5.5	3.8	"	(4.1)	2.0	"	1.4	2.2	0.8	23.5
	Total	$27.3	$23.0	$72.4	$14.1	$unknown	$(1.5)	$ 7.1	$unknown	$ 9.2	$(1.6)	$6.7	$154.3
	Avg.	$ 2.7	$ 2.3	$ 7.2	$ 1.4	$unknown	$(0.2)	$ 0.7	$unknown	$ 0.9	$(0.2)	$0.7	$ 15.4

blush, to be quite high. However, it is consistent with the thesis that the industry was then facing a less than optimistic future, that sales and profit growth would be minimal, and that there was relatively little incentive or need to reinvest substantial sums of money in the industry. Exhibit V offers confirming evidence of this.

From 1947 through 1966, average sales increased from $32,000,000/year to only $90,000,000. A heavy portion of this increase can be accounted for by the rapid inflation immediately following the war with North Korea plus the steady 1-1/2 to 2% rate of inflation realized in our economy in most other years covered by this analysis.

Deeper analysis (Exhibit VI) shows that specific companies grew more rapidly than others as a result of the demand for combatants and thus accounted for a significant portion of overall industry growth. At least two of these were Navy oriented (Companies C & J) and bid aggressively for Navy business. One firm (C) was highly profitable and remained so. The other, in keeping with the two-tiered concept, bid aggressively but unsuccessfully and was one of the two firms that incurred heavy losses in the ten year period of 1957-1966.

In this regard, Exhibit IX is especially revealing. The industry quickly splits into two groups: one showing steady growth on sales and profits (A, B, C, E, and K), and the other volatile sales and profit patterns (D, F, G, H, I, and J). This history obtains for the next twenty years and, indeed, carries forward through 1976.

The two later entries into the industry not included in Exhibit IV--General Dynamic and Lockheed--are the primary basis for the vary substantial losses recorded by the industry as a whole from 1967 through 1976. However, based on the data shown in Exhibit 5 through 9, it is evident that the U.S. shipbuilding

industry was profitable for the twenty year period ending in 1966. On balance, industry performance was "good," and especially so if it is recognized that the industry was then populated by small to medium sized, thinly capitalized firms.[4/]

CAPITAL INVESTMENT

Exhibit VIII provides the most striking evidence of all on the dynamics of the shipbuilding industry in the immediate post-war years. In 1966, the net book value of the monies invested in plant and equipment for the nine major shipbuilding firms included in this study was only $135,000,000.

With the exception of one firm only, the more common range of monies invested in plant and equipment was between $6-10,000,000. This we regard as evidence of the labor intensive nature of the industry, and what now must be regarded as the relatively minimal sums of money invested by the industry in its shipbuilding capacity. By no means could any of the then independently owned firms within the industry be regarded as large, well financed or capital intensive companies. In retrospect, it would appear evident that they were not then prepared for the vast build-up in sales that came in the '70s as the joint result of new Navy construction and the commercial construction, however limited, generated by Marad 70.

In support of this thesis, Table 2 presents data on the net investment in plant and equipment and the sales volume of four smaller but profitable shipyards for the ten years from 1967 through 1976.

Company A increased its net investment in plant and equipment by $15.6 million in order to realize sales of almost $1.9 billion. Company B, after failing to reinvest in new plant and equipment for the prior twenty years, increased its net investment in plant and equipment by only $26.1 million dollars to realize a profitable

TABLE 2

Sales and Net Book Value of Plant and Equipment
for Four Firms, 1967 through 1976
(Dollars in 000,000)

	Company A		Company B		Company C		Company D	
Year	Sales	P&E Net	Sales	P&E Net	Sales	P&E Net	Sales	P&E Net
1967	$159.0	$24.3	$68.3	$6.0	$47.1	$9.6	$69.1	$6.4
1968	194.1	27.9	178.1	8.9	45.3	14.0	21.5	7.0
1969	216.4	32.8	89.6	8.3	38.3	16.1	26.7	7.5
1970	218.4	39.8	101.3	7.7	73.7	19.4	15.4	7.8
1971	148.8	41.0	68.4	8.1	95.1	20.7	37.7	8.2
1972	131.9	47.9	68.3	11.3	76.6	32.0	30.0	8.0
1973	182.1	40.3	118.0	17.1	91.7	29.2	85.2	8.1
1974	176.6	38.9	180.9	23.0	93.3	22.8	43.9	9.8
1975	216.6	40.9	216.9	32.2	87.6	23.0	43.7	12.4
1976	245.3	39.9	222.9	32.1	132.5	22.9	32.2	14.1
TOTAL	$1889.2		$1312.7		$775.2		$405.4	

$1.3 billion in sales volume. Company C and D spent $13.3 and $7.7 million respectively to profitably pursue $725 and $404 million in new business. Based on this data it seems safe to assume that investments in facilities are not directly correlated with either sales, profits, or a marked improvement in efficiency in the U.S. shipbuilding industry. The more operable factor appears to be the size, skill level and "manageability" of the construction site labor force. In light of the construction versus production orientation of the shipbuilding industry, this outcome is not unexpected.

Table 3, in turn, provides F.T.C. data on gross capital expenditures within the industry from 1957 through 1976. Of note is the fact that there was no substantial build-up in industry capacity as measured by capital investment until after 1970. The most significant investments dollar-wise were incurred from 1972 through 1976, or concurrent with the sharp increase in industry sales. In other words, the industry does not appear to have anticipated the rapid growth period that materialized after 1972. Rather, it appears to have played "catch-up" ball. Based on current projections of new construction, this later investment in new plant and equipment now appears to be too much and too late. The industry can now be expected to go from an under facilitized to over facilitized situation within a brief ten year time frame. Cost-wise, they will lose the flexibility that they maintained from 1947 through 1967 to 1970.

This new situation of over investment can be expected to generate an even more tensely competitive environment within the industry these next few years than now exists. It may also serve to hasten the demise of the less efficient firms. Last, it can be expected to increase the price that the Navy will have to pay the surviving firms for the combatants that it needs to maintain the fleet.

TABLE 3

Industry (SIC 3731) Capital Expenditures by Year, 1957 through 1976

Year	Capital Expenditures (Dollars in 000,000)	Capital Expenditures ¢ per Dollar of Sales	Capital Expenditures per Employee
1957	$58.0	3.8¢	$475
1958	38.7	2.4	326
1959	33.7	2.2	291
1960	29.9	1.9	267
1961	31.6	1.9	277
1962	23.0	1.3	205
1963	24.4	1.4	212
1964	32.8	1.7	285
1965	44.6	2.1	343
1966	52.8	2.2	391
1967	20.3	2.7	505
1968	75.9	3.1	535
1969	88.1	3.4	616
1970	144.1	5.3	1088
1971	89.0	2.7	695
1972	142.0	5.1	979
1973	131.0	3.3	862
1974	216.0	4.5	1333
1975	297.9	5.3	1785
1976	354.6	6.0	2132

Source: the Federal Trade Commission

In essence, the industry appears to have increased its fixed costs at the least opportune time. More data on the contents of these investments is needed, and especially so if they serve to increase specialization within the industry. Data of this type was not regarded as relevant to this study despite its overall importance to a full understanding of the dynamics of the industry. One of the unanswered question is the joint impact on management of simultaneously managing major shipbuilding and capital investment programs.

SUMMARY ON INDUSTRY PROFITABILITY FROM 1947 TO 1966

For the twenty year period through 1966, then, the United States shipbuilding industry was reasonably profitable despite the relatively low level of demand for both merchant vessels and combatants.

In retrospect, we find this outcome surprising. The industry, for the most part, was comprised of thinly capitalized small to medium sized firms, with relatively small sums of money invested in plant and equipment. Competition was no doubt tense as attested to by the drop after 1956 in the average return on sales earned by virtually every firm within the industry. Conversely, the industry was able to adapt to this situation, if return on invested capital is used as a criterion of corporate flexibility. In addition, at least one new entrant into the industry, Avondale, was able to grow profitably and emerge in the early 1970's as one of the major factors within the industry.

Older firms such as Bath and Newport News were able to sustain their position: Bath by concentrating on the construction of smaller combatants (destroyers and frigates) and Newport News by concentrating on the more complex, larger, nuclear powered combatants.

The signal failure in the industry during this period of time was the old New York Shipbuilding Company. This firm reported the only substantial loss incurred by the industry through 1966. Since there are rather unusual circumstances surrounding this firm, it is difficult to determine whether this was an industry failure, per se, or due to the inability of the firm to manage its own affairs. The available evidence would suggest that the firm fell victim to its own management rather than disorderly competition within the industry or an otherwise untoward economic environment.

Litton, the second of the industry's troubled firms during the late 1950s and early 1960s operated quite successfully through 1956. Its history after that time is less than satisfactory.

However, prior to its takeover by Litton, Ingalls had gone through a series of management changes, had deferred virtually all investments in new plant and equipment until the mid-50s when it entered the submarine construction business, and had been subjected to the internecine squabbles of the Ingalls family. Once again, as with N.Y. Shipbuilding, the unresolved issue is whether Litton's failure to prosper was the result of the economics of the shipbuilding industry or due, instead, to the management and family problems to which it fell heir. The evidence would strongly suggest that Ingalls' problems were internally generated.

Based on the data available to us, we believe that both Litton and N.Y. Shipbuilding were "special cases," that their failure to earn profits from 1957 to 1966 was the result of internal management problems otherwise unrelated to the economics of the shipbuilding industry. This is not meant to be a harsh appraisal but the result of an analysis of the operations of the ten firms that then accounted for the bulk of the industry's output.

A more detailed analysis of a select group of six firms is undertaken in Chapter III of this report in amplification of these judgments.

CHAPTER II: FOOTNOTES

1. In our various analyses we have referred to the shipbuilding industry as labor intensive. The basis for this judgment is the relationship of sales to plant and equipment (net). For the ten years ending in 1956, the ratio was 7.2:1; i.e., $1.00 in plant and equipment allowed the industry to produce $7.20 in product. Confirming evidence can be found in Table 3. In the late '50s and early '60s, capital expenditure per dollar of sales averaged less than 1.5¢. The bulk of the industry's costs are for purchased materials and labor with labor accounting for the greater proportion of the expenditure.

2. In any discussion of this type, the problem of the "buy in" always surfaces. Within the defense industry, it is presumed that some firms will bid extremely low on a contract--overtly accepting the probability of a loss--when business is slack, and that this "buy in" is the cause of some low operating profits or losses reported by the defense industry. This is no doubt true in the shipbuilding industry although we did not attempt to seek out any evidence in this regard. At the same time, some firms may knowingly bid in at higher prices than expected due to a specific technological advantage that they may then have, or, quite often, with the knowledge that none of their competitors are interested in this specific procurement. Once again, we did not seek supporting data here.

3. The actual rate may be even higher based on the evidence of some capital distributions made to stockholders in the late 1940s.

4. Throughout this report we have categorized shipbuilding as a thinly capitalized industry. The initial basis for this statement is the high sales to invested capital ratio displayed by the industry. Ratios of 3, 4, and 5:1 are relatively common and occasionally reach 6 or 7:1. The more normal expected range for an industrial company is 1.5:1 to 2:1. The industry's reliance on progress payments from the Navy is also, in our opinion, evidence of a thin capital base. However, as noted in the body of the report, we regard this as an appropriate corporate response to a highly competitive market place subject to highly variable and oftentimes unpredictable demand factors.

CHAPTER III: A SIX COMPANY REVIEW

INTRODUCTION

In order to validate the data and analysis set out in Chapter II, a more detailed study was made of the six firms regarded as vital to the Navy's shipbuilding base: Avondale, Bath, Electric Boat (1947-1952) Quincy (1967-76), Litton, Newport News and Todd. Data on these firms is presented in Exhibits X through XVII, inclusive.

Exhibit X and XI show the sales, net worth, profits, and the after tax return on sales and net worth for this group of companies for twenty years through 1966. On balance, this segment of the industry appears to have performed satisfactorily for the entire twenty year period. In order to validate this appraisal, we compared in Table 4 the performance of this group of companies with the Fortune 500. The shipbuilding base presented in this Table includes four profitable and one loss company. If the one loss company is eliminated, this special subset of the industry would show a 3.4% after tax return on sales and a 9.1% after tax return on net worth. Missing from this analysis is data on Electric Boat. No public record of this firm's sales or profits appears to be publicly available. However, the limited data now available to us from the Renegotiation Board would strongly suggest that Electric Boat was highly profitable throughout the entire twenty year period. In fact, it is likely that it was the most profitable firm in the industry from 1951 through at least 1970, such that its inclusion in Table 4 would impart further upward bias to the data on the shipbuilding industry.

EXHIBIT X: Sales, net worth, profit after tax, related financial data

Special sample - [1] 1947 to 1956 - (Dollars in 000,000's)

YEAR	SALES (000)	NET WORTH (000,000)	PROFIT AFTER TAX (000,000)	PROFIT AS A % OF	
				SALES	NET WORTH
1947	$ 241,300	$ 101.7	$ 6.8	2.8%	6.7%
1948	242,400	110.1	16.9	6.9	15.3
1949	222,700	115.1	11.4	5.1	9.9
1950	160,500	114.5	7.4	4.6	6.5
1951	250,700	119.3	11.4	4.5	9.6
1952	427,300	123.3	14.7	3.4	11.9
1953	321,100	107.6	10.6	3.3	9.9
1954	335,600	114.7	12.5	3.7	10.9
1955	380,200	124.3	14.1	3.7	11.4
1956	312,600	132.2	12.5	4.0	9.5
Total	$ 2,894,400	$ 1,162.8	$ 118.3	4.1%	10.2%
Avg.	$ 289,400	$ 116.3	$ 11.8	4.1%	10.2%

[1]
Avondale
Bath
Electric Boat (1947-52)
Todd
Newport News
Ingalls

EXHIBIT XI: Sales, net worth, profit after tax, related financial data

Special sample - [1] 1957 to 1966 - (Dollars in 000,000's)

YEAR	SALES (000)	NET WORTH (000,000)	PROFIT AFTER TAX (000,000)	PROFIT AS A % OF	
				SALES	NET WORTH
1957	$ 416,900	$ 134.9	$ 9.5	2.3%	7.0%
1958	463,300	140.2	11.7	2.5	8.3
1959	460,100	149.3	14.7	3.2	9.8
1960	441,400	152.7	11.7	2.9	7.7
1961	509,300	162.3	11.5	2.3	7.1
1962	512,600	162.5	11.1	2.2	6.8
1963	538,300	165.6	13.9	2.6	8.4
1964	585,400	170.1	15.1	2.6	8.9
1965	549,100	184.2	17.4	3.2	9.4
1966	722,100	186.9	17.1	2.4	9.1
Total	$ 5,198,500	$ 1,608.7	$ 133.7	2.6%	8.3%
Avg.	$ 519,850	$ 160.9	$ 13.4	2.6%	8.3%

[1]
Avondale
Bath
Electric Boat (1947-52)
Todd
Newport News
Ingalls

TABLE 4

	Fortune 500		Five Shipbuilders	
	After Tax Profits as a % of			
Year	Sales	Net Worth	Sales	Net Worth
1957	5.6%	11.6%	2.3%	7.0%
1958	4.9	9.1	2.5	8.4
1959	4.9	10.3	3.2	9.8
1960	4.4	9.1	2.6	7.8
1961	4.2	8.3	2.2	7.8
1962	4.2	8.9	2.2	6.8
1963	4.4	9.1	2.6	8.4
1964	5.0	10.5	2.6	8.9
1965	5.5	11.8	3.2	9.4
1966	5.6	12.7	2.4	9.2

On this basis, the industry appears to compare reasonably well with the "Fortune 500" despite the fact that the independently owned shipbuilding firm was, through 1967, a relatively small and thinly capitalized firm. The "Fortune 500" to the contrary represents the most substantial, well financed, and profitable group of companies in the United States. The industry was apparently able to survive and prosper by remaining inherently conservative; i.e., limiting or otherwise moderating sales growth and investments in new plant and equipment. When it departed from this policy after 1967--and when aerospace subsidiaries attempted to enter or otherwise dominate specific segments of the industry--the situation, as discussed in the Executive Summary, deteriorated rapidly.

In support of this contention, Exhibits XII, XIII, XIV, and XV present data on sales, profits, net worth and net investment in plant and equipment for each of the six companies included in this group for the twenty year period under review. Of note (Exhibit XII) is the rather steady rate of sales growth exhibited by all of the firms other than Company A and to some extent Company E.

As might be expected, volatile sales can be used (Exhibit XIII) to predict profits. These companies that sought after more stable sales growth clearly did better financially than the two companies (A and E) that apparently bid more aggressively on new business than now appears warranted by their operating results. The same behavior and profit outcome is evident in a review of companies not included in this specific six company review.

Similarly (Exhibit XIV), those companies that pursued a moderate but sustained policy of reinvesting in new plant and equipment did better financially than those that did not, once again, Companies A and E. This outcome is, of course, consistent with conventional management theory which relates capital investment to increased capacity and efficiency. There is, however, a

EXHIBIT XII: Sales by company - Special group - (Dollars in 000,000's)

YEAR	TOTAL	CO. A	CO. B	CO. C	CO. D	CO. E	CO. F
1947	$ 241.3	$ 68.5	$ 26.9	$ 61.2	$ 10.6	$ 69.1	$ 5.0
1948	272.4	23.7	54.5	81.8	19.5	83.4	9.0
1949	222.7	9.6	45.2	77.6	24.4	59.5	6.3
1950	160.5	1.0	41.8	52.2	26.4	33.5	5.7
1951	250.7	11.7	82.6	88.9	32.4	46.0	11.1
1952	427.3	8.2	134.5	147.4	40.2	75.7	21.3
1953	321.1	21.1	unknown	157.1	37.8	78.9	26.2
1954	335.6	47.5	"	149.5	44.4	70.4	23.8
1955	380.2	124.6	"	122.5	42.8	64.2	26.2
1956	312.6	43.1	"	117.8	44.8	69.1	37.8
1957	416.9	54.3	"	177.6	46.7	93.5	44.8
1958	463.3	106.6	"	171.6	60.1	93.4	31.5
1959	460.1	88.4	"	191.1	58.9	81.5	40.2
1960	441.4	66.5	"	195.5	53.4	76.3	49.7
1961	509.3	62.6	"	251.4	44.6	107.9	43.8
1962	512.6	1.5	"	267.2	55.2	125.2	63.3
1963	538.3	80.8	"	226.4	52.3	111.4	77.3
1964	585.4	75.3	"	258.2	49.7	99.5	102.8
1965	549.1	104.0	"	275.8	43.9	100.2	125.1
1966	722.1	148.7	"	254.1	44.7	132.9	141.7

EXHIBIT XIII: Profits by company - Special group - (Dollars in 000,000's)

YEAR	TOTAL	CO. A	CO. B.	CO. C	CO. D	CO. E	CO. F
1947	$ 6.8	$ 0.2	$ 0.6	$ 5.2	$(1.4)	$ 1.0	$ 0.4
1948	16.9	1.3	2.1	7.8	0.6	4.0	1.2
1949	11.4	0.4	0.4	8.2	0.8	1.4	0.3
1950	7.4	0.3	1.4	2.3	1.1	(2.9)	0.4
1951	11.7	0.5	3.9	3.4	1.2	2.1	0.7
1952	14.7	1.0	4.9	3.9	1.4	2.6	0.9
1953	10.6	1.0	unknown	5.2	1.5	2.0	0.9
1954	12.5	(1.4)	"	7.2	2.3	0.3	1.4
1955	14.1	4.7	"	4.8	2.6	1.0	1.0
1956	12.5	2.5	"	3.4	2.8	1.8	1.9
1957	9.5	(4.3)	"	6.4	2.1	4.7	2.3
1958	11.7	(2.0)	"	6.7	2.1	2.8	2.0
1959	14.7	1.4	"	7.8	2.6	0.4	2.5
1960	11.7	1.5	"	7.9	2.4	(1.0)	0.8
1961	11.5	(0.6)	"	7.0	2.3	1.3	1.4
1962	11.1	(0.2)	"	8.2	1.4	(0.5)	2.2
1963	13.9	1.6	"	7.3	1.2	1.4	2.4
1964	15.1	2.1	"	7.6	1.3	1.2	2.9
1965	17.4	2.9	"	8.0	0.9	0.0	5.6
1966	17.1	(4.1)	"	5.5	6.7	3.8	5.2

EXHIBIT XIV: Net worth by special group - (Dollars in 000,000's)

YEAR	TOTAL	CO. A	CO. B	CO. C	CO. D	CO. E	CO. F
1947	$ 101.7	$ 10.6	$ 19.2	$ 25.2	$ 10.3	$ 34.9	$ 1.3
1948	116.1	9.3	20.4	28.8	10.3	39.0	2.4
1949	115.0	7.7	20.2	33.6	11.6	39.4	2.5
1950	114.5	7.7	19.8	36.2	12.3	35.7	2.7
1951	119.3	7.4	21.7	36.9	12.7	37.4	3.2
1952	123.3	8.4	21.0	38.5	13.1	38.4	3.9
1953	107.2	9.4	unknown	40.8	13.7	39.1	4.6
1954	114.7	11.4	"	44.2	14.7	38.3	5.8
1955	124.3	15.2	"	47.4	16.2	39.1	6.5
1956	132.2	16.7	"	49.3	18.2	39.8	8.3
1957	134.9	12.4	"	51.6	19.7	42.7	8.5
1958	140.2	10.5	"	55.1	20.5	43.8	10.2
1959	149.3	11.2	"	59.0	21.6	45.3	12.2
1960	152.7	12.6	"	63.2	23.6	43.1	10.2
1961	162.3	15.1	"	67.2	24.3	44.9	10.8
1962	162.5	5.5	"	71.2	26.1	43.4	12.3
1963	165.6	6.6	"	75.2	26.1	43.8	14.0
1964	170.1	8.7	"	78.8	26.5	43.9	12.2
1965	184.2	11.5	"	82.8	27.2	44.9	17.7
1966	186.9	7.4	"	85.9	23.8	46.9	23.0

EXHIBIT XV: Book value of net investment in capital equipment - Special group 1947 through 1966 - (Dollars in 000,000's)

YEAR	TOTAL	CO. A	CO. B	CO. C	CO. D	CO. E	CO. F
1947	$ 27.6	$ 0.5	$ 2.6	$ 9.0	$ 1.7	$ 13.0	$ 0.8
1948	31.1	0.5	2.9	11.6	2.0	12.9	1.2
1949	36.3	0.4	4.4	14.7	2.7	12.9	1.2
1950	40.8	0.4	6.4	16.1	3.1	13.5	1.2
1951	42.0	0.4	6.9	16.5	3.6	12.7	1.9
1952	44.0	0.8	6.8	18.2	3.9	11.9	2.4
1953	46.9	1.4	unknown	19.7	3.8	11.7	3.3
1954	41.0	2.0	"	20.0	4.0	11.4	3.7
1955	43.0	2.6	"	20.3	4.3	11.7	4.1
1956	48.0	3.9	"	21.2	5.3	12.5	5.1
1957	53.7	5.5	"	23.0	6.0	13.5	5.7
1958	60.1	7.1	"	26.4	6.0	15.1	5.6
1959	66.3	9.4	"	29.2	6.0	15.3	6.3
1960	72.3	8.7	"	30.1	6.0	18.1	9.4
1961	75.8	10.0	"	32.3	6.1	18.3	9.2
1962	80.9	9.8	"	37.3	6.2	18.5	9.0
1963	83.9	10.2	"	39.9	6.0	18.1	9.6
1964	86.5	11.8	"	40.1	6.5	17.1	11.0
1965	93.7	13.6	"	41.0	7.6	19.5	12.4
1966	104.1	14.3	"	43.7	8.9	23.0	14.1

potential circularity here: only those firms that are profitable have the funds available for timely reinvestment in new plant and equipment. However, when Exhibit XIV is compared to Exhibit XIII and XV (Profits and Net Worth) it is reasonably evident that the two companies that failed to reinvest in new plant and equipment did, in fact, have the resources available for these reinvestments.[1/] Although it is impossible now to reconstruct history, it is safe to say that these two firms elected to limit their capital investment programs to sporadic and relatively minimal sums of money. This policy impacted seriously on their profitability throughout the entire twenty year period under review.

Exhibit XVI provides comparative statistics on the profitability of each of these firms and relates the data presented in Exhibits X through XV. It once again provides data in support of our judgment that the shipbuilding industry has historically consisted of one profitable and one unprofitable group of companies. Notwithstanding the above, it is evident that operating conditions within the industry were satisfactory until at least 1966 but deteriorated rapidly after that date.

In this regard, Exhibit XVI can be used as a predictor for the results for this six company group set out in Exhibit XVII. Despite their prior history of profit, this critical group of companies sustained a cumulative loss of $29.2 million from 1967 through 1976 on sales of $17.4 billion. General Dynamics' loss of $84.5 million (Exhibit II) is included in this summary and weighs heavily on the final outcome. Also included is the $45,000,000 loss on a commercial contract sustained in 1975 by Todd. However, firms other than these two sustained losses during these years. In fact, four of the six companies in this sample sustained losses in one or more of the years presented in the Exhibit, suggesting a serious degradation in the environment in which the shipbuilding industry now operates. This is the basis for our

EXHIBIT XVI: Profit rates after taxes on sales and net worth - Special group 1947 through 1966 - (Percentages)

YEAR	A		B		C		D		E		F	
	SALES	NET WORTH	SALES	NET WORTH	SALES	NET WORTH	SALES	NET WORTH	SALES	NET WORTH	SALES	NET WORTH
1947	0.2%	1.4%	2.2%	3.1%	8.4%	20.6%	(13.2)%	(13.4)%	1.4%	2.7%	8.5%	31.9%
1948	0.6	14.2	3.8	10.2	9.5	27.1	2.8	5.4	4.7	10.2	12.9	40.7
1949	3.9	4.9	1.0	2.1	10.5	24.4	3.2	6.6	2.4	3.6	5.1	12.6
1950	3.1	0.4	3.3	7.1	4.5	6.4	4.0	8.6	(8.7)	(8.1)	6.2	13.1
1951	5.0	8.0	4.7	17.8	3.9	9.2	3.6	9.1	4.5	5.5	6.4	22.3
1952	12.2	11.9	3.7	23.4	2.7	10.2	3.4	10.3	3.5	6.8	4.1	22.1
1953	4.6	10.4	unknown	unknown	3.3	12.7	4.0	10.9	2.5	5.0	3.5	19.7
1954	(0.8)	12.1	"	"	4.8	16.3	5.2	15.7	0.4	0.8	5.7	23.3
1955	3.8	31.2	"	"	3.9	10.1	6.1	16.0	1.7	2.7	3.5	14.0
1956	5.9	15.1	"	"	2.9	6.9	6.3	15.4	2.7	4.6	5.11	23.6
1957	(2.9)	(34.4)	"	"	3.6	12.4	4.6	10.8	5.0	10.9	1.2	6.1
1958	(1.9)	(19.0)	"	"	3.9	12.2	3.5	10.3	3.0	6.5	6.5	19.9
1959	1.6	12.8	"	"	4.1	13.2	4.3	11.8	0.5	0.9	6.2	20.3
1960	2.2	11.6	"	"	4.1	12.5	4.6	10.3	(1.3)	(2.3)	1.7	8.3
1961	(0.9)	(3.9)	"	"	2.8	10.4	5.3	9.7	1.2	2.9	3.1	12.6
1962	(1.7)	(2.9)	"	"	3.1	11.5	2.5	5.2	(0.4)	(1.1)	3.7	18.1
1963	2.0	24.8	"	"	3.2	9.7	2.3	4.5	1.3	3.3	3.1	16.9
1964	2.8	24.1	"	"	2.9	9.7	2.6	4.9	1.2	2.7	2.8	23.8
1965	2.8	24.9	"	"	2.9	9.7	2.0	3.3	0.0	0.0	4.4	31.3
1966	(2.8)	(55.9)	"	"	3.2	6.4	15.0	28.2	2.9	8.1	3.7	22.8

EXHIBIT XVII: Sales and after tax profits - Special group - Segregated by year, profitable vs. unprofitable companies.

YEAR	NO. OF COS.	SALES	PROFITS	RETURN ON SALES	PROFIT COMPANIES				LOSS COMPANIES			
					NO. OF COS.	SALES	PROFITS	RETURN ON SALES	NO. OF COS.	SALES	PROFITS	RETURN ON SALES
1967	6	$ 1,129.4	$ (1.9)	0.16%	4	$ 992.3	$ 15.8	1.6%	1	$ 137.1	$ (17.7)	12.9%
1968	6	1,001.0	(51.7)	5.2	4	587.5	10.1	1.7	2	413.5	(61.8)	14.9
1969	6	1,246.0	(36.6)	2.9	3	582.9	18.1	3.1	3	663.1	(54.7)	8.2
1970	6	1,346.6	28.9	2.1	6	1,346.6	28.9	2.1	-	unknown	unknown	unknown
1971	6	1,330.9	11.2	0.8	4	731.6	15.6	2.1	2	599.3	(4.4)	0.7
1972	6	1,366.1	10.1	0.7	4	986.9	13.7	1.4	2	379.2	(3.6)	0.9
1973	6	1,802.8	3.0	0.17	5	1,353.2	11.0	0.9	1	449.6	(8.0)	1.8
1974	6	2,206.0	(3.3)	0.14	4	1,468.3	16.9	1.2	2	737.7	(20.2)	2.7
1975	6	2,926.7	(22.9)	0.78	4	1,861.6	29.4	1.6	2	1,065.1	(52.3)	4.9
1976	6	3,083.0	3.4	1.1	5	2,472.9	45.1	1.8	1	610.1	(11.1)	1.8
Total		$17,438.5	$(29.2)	0.16%		$12,383.8	$204.6	1.7%		$5,054.7	$(233.4)	4.6%
Avg.		$ 1,743.9	$ (2.9)			$ 1,238.4	$ 20.5			$ 505.5	$ (23.3)	

comment in the Executive Summary on critical instabilities within the industry.

The incontrovertible fact, then, is that this segment of the industry sustained losses. As noted in Exhibit II, the entire industry did not. The offsetting profits were earned by a group of small firms who, heretofore, had been less profitable than the six companies comprising our special group. Although it served to confirm our earlier statements on the relationship between rapid sales growth, volatility and profits, this outcome was completely unexpected. It provided, however, some confirming evidence in support of the thesis that constructing Naval non-combatants is more profitable than constructing combatants. It also raises the as yet unanswered question as to whether or not "small is beautiful" in shipbuilding. Our evidence would suggest that the optimal sized shipyard employs no more than 6,000 to 8,000 persons. However, this is only an inference. No data in this regard was sought after this study.

EVALUATION

No clear cut picture of the industry emerges from the data. Indeed, no final analysis of the industry can be made until such time as the current claim situation is resolved. Nonetheless, we believe that a number of useful generalizations on the industry can be made:

1. Some companies, mostly the "old line" shipbuilding firms have managed well for the past thirty years if profits are used as the criterion. With the exception of Newport News, these are the moderately sized firms. The newer entries into the industry, primarily the aerospace conglomerates, have done poorly. These are the firms that apparently reached prematurely for substantial sales growth.

2. Although the industry is labor intensive, there appears to be some observable relationship between sales, profits and investments in new plant and equipment. Those firms that reinvested moderately but consistently in new plant and equipment over the twenty year time span, appear to have faired better than those firms whose investments were sporadic. This outcome is to be expected if a consistent reinvestment policy is considered as one of the hallmarks of good management.[2/]

3. In similar fashion, those firms that show a steady but moderated pattern of growth earned more money than those firms whose sales pattern show great volatility. This, once again, appears to be the outcome of a managerial approach to sales and profit planning. Some firms clearly played the bidding game and sought after large sales volume to the detriment of profits. Others pursued a more conservative approach and sought after only that business which it had reason to believe would generate satisfactory profits. The more conservative approach appears to be the wiser choice in the shipbuilding industry.

4. The well-managed firm sought to limit the sums of money reinvested in plant and equipment in order to maximize the return on invested capital as a way of compensating for the enhanced business risk created by the need to reach for a larger sales base than might otherwise be desirable. At the same time, these firms reinvested moderate sums of money annually in new plant and equipment. More data are clearly needed here but this pattern appears to emerge from an analysis of the data now available to us, although additional data is clearly needed for a more complete analysis of the relationship between profits and facilities. In light of the above, it appears safe to say that the U. S. Shipbuilding industry managed successfully from 1947 to 1966, despite the growth of foreign competition, conflicting government policies, and the lack of an orderly, sustained and otherwise adequate

demand for commercial ships. Given the particular facts surrounding the shipbuilding industry, however, one would have expected to see most, if not all companies, losing money in the post WWII years, and saddled with heavy fixed costs representing extensive capital expenditure programs in the 1939-1946 time frame. This did not occur. The net book value of fixed assets owned by most firms in 1947 was minimal, allowing the industry greater flexibility than initially contemplated in this study. In sum, the industry was able to remain labor intensive. This is an intelligent policy, in our opinion, to pursue during periods of less than optimal demand.

Conversely, the available data pin-points the fact that both the Navy and the shipbuilding industry was poorly prepared for the tremendous sales growth experienced in the 1970s. Two or three conclusions appear to be appropriate here:

- The growth in facilities expenditures lagged well behind sales growth. Sales forecasting within the industry appears to be deficient.
- Neither the Navy nor the industry appear to have given sufficient thought to the problems created by the development of a highly concentrated industry. Some factors such as the recruiting and managing of large scale labor forces in one central location were apparently ignored with resultant serious consequences.
- The growth in the size and complexity both of combatants and non-combatants was apparently not fully contemplated. Both the Navy and the industry appear to have pursued a "business as usual" policy despite the managerial and technological problems that were then beginning to impact on the industry.

In sum, both the Navy and industry apparently lacked the managerial overview necessary for the maintenance of a healthy shipbuilding base. This is the only conclusion that can be drawn from an analysis of the profitability of the shipbuilding industry from 1967 through 1976.

CHAPTER III: FOOTNOTES

1. Full data on the cash and debt position of these companies was available and is the basis for this judgement.

2. Because of time and scope limitations, we sought no data from the shipyards on the relative split between investments in increased capacity; i.e., a new ship way, and investments in labor saving modern machinery and semi-automatic equipment. Based on the informal data available to us, the investment in the '60s were most likely of the latter type. The investments made by the various shipyards in the 1970s appear to be more capacity oriented. If this is so, the industry, as discussed in Chapter IV, faces some serious problems in the immediate future.

CHAPTER IV: PROFIT DRIVING FACTORS IN THE SHIPBUILDING INDUSTRY

INTRODUCTION

There is no normative measure of the term "a reasonable profit." Nothing in economic theory dictates that an industry should be profitable. Conversely, the existence of profits is often used as a surrogate measure of an industry's efficiency; profits go to the efficient, losses to the inefficient, subject to a sufficient demand for the industry's output to provide for the adequate utilization of the capital invested in the industry.

However, even when demand is sufficient to generate an adequate utilization of capacity and prices are high enough to provide for profits, there is no judgmental basis for stating that a return on sales, for example, of 5 to 6% or a return on owners capital of 10 to 12% is either adequate, reasonable, or equitable. All that one can do either in practice or in theory is to describe the outcome.

If judgments are needed, then some evaluative measures need to be established. However, these evaluative measures are normally outside of the purview of the industry. Judgments on the adequacy of an industrial base, its capital investment and job creation potential are ultimately political decisions albeit with economic overtones. Being political, they are beyond the scope of the industry per se. The sole judgment that industry can make on its own is either to remain in or abandon the industry. This judgment is normally made solely on economic criterion.

In arriving at this decision, economic data is obviously useful. The key analysis to be made here is intuitively obvious: is it more profitable in the long run to remain in a potentially marginally profitable industry than to close down, sell or otherwise abandon a cluster of assets? As history shows, a number of companies exitted the shipbuilding industry at the end of World War II.

For all practical purposes, however, the pre-war and post-war shipbuilding industry was made up of virtually the same group of firms: Newport News, Ingalls, Bath, Todd, New York Shipbuilding, Sun, and Bethlehem.

These firms evidently decided to remain in the industry despite the overwhelming evidence available to them that they would be entering a period characterized by excess capacity and slackened if not minimal demand. In this context, it should then be remembered that the various firms comprising the industry made a positive decision to remain in the industry based on their assessment of the future sales and profit potential of the industry. As business managers they no doubt understood the business risks to which they were exposing themselves in electing to remain in the shipbuilding business.

As illustrated by the data, some of the firms in the industry managed to earn what appear to be "respectable" profits over the past thirty years.

Here we need to define the term "respectable." The measure that we have used in determining "respectability" is the average rate of return on sales and owners capital earned by these firms comprising the "Fortune 500." These are the bellweather firms in the United States. They account for the preponderance of our industrial output, and they are generally regarded by observers as the best managed and best financed group of firms within the United States. We believed that using the performance of this large group of firms as an evaluative measure allows us to avoid the criticism of having selected a less efficient base for comparative purposes or otherwise making inappropriate judgments on the nature of the shipbuilding industry. Conversely, in selecting the "Fortune 500" as our comparative base we are aware that we may be subjecting them to an unfair comparison. In essence, we

are comparing a relatively small industry with a spotty history to the best that the United States has to offer industrially.

However, the economic/financial differences between the shipbuilding industry and the Fortune 500 are more pervasive than those suggested by sales and profit comparisons only. The shipbuilding industry is a part of our so-called defense industrial base. Based on our research, a direct comparison of the "defense industry" to the non-defense segment of American industry can be seriously misleading. Compared to the typical "Fortune 500" firm:

1) Most large scale defense-oriented firms are labor intensive.

2) Most large scale defense-oriented firms are thinly capitalized.

In a sense, this suggests that most defense oriented firms financially are the "weak sisters" of our economy. Based on our analysis, this statement is both true and untrue reflecting the rather contradictory nature of the defense business.

1. The demand for the output of this group of firms has not been sufficient since WWII to allow for heavy investments in labor-saving or labor-substituting plant and equipment. Because of military doctrine, budgetary constraints, and related foreign and military policy, the rate of throughput has been less than optimal for industrial efficiency. Given this, the more intelligent business policy would be to remain labor intensive. In periods of slack demand, the lower breakeven point obtained by remaining labor intensive is more important than the potentially more substantial profit that can be generated by a capital intensive firm during periods of enhanced demand.

2. Profits on defense sales tend to be low; 2% to 4% pretax is considered to be "normal" by many defense-oriented firms. Conversely, many of these selfsame firms earn as much as 20-60%

pretax on the equity capital invested in defense work. We regard this difference as prima facie evidence of a thin capital base created in response to the intensely competitive and unpredictable nature of defense business. Once again, we would maintain that a thin capitalization is the best business strategy to pursue given the nature of competition within the defense industry.

We would also maintain that defense business is not attractive to the "cream of the crop" of American industry.

This gives rise to a dangerous circularity: only the thinly capitalized, labor intensive firm has the potential ability, need, or motivation to survive in the defense business such that these are the only firms upon whom the DOD can rely. Thus the DOD is locked into doing business with a group of vendors who, for the most part, are less than stable financially if conventional measures of corporate health are used. Their lack of stability must then be offset by such devices as cost plus contracts and generous progress payments. By shifting the business risk and capital formation problem from the seller to the buyer as compensation for low rates of return on sales, and the appearance and/or reality of intense competition, the seller locks himself into a thinly capitalized future with a continuing reliance on defense procurements. The DOD, in turn, locks itself into a continuing and potentially growing dependence on a group of firms who are relatively weak financially. This then calls for the tight cost control, surveillance activities, and the "engagement" process that is the administrative outgrowth of cost plus contracts and routinely scheduled progress payments.

Of importance to this analysis, then, is the history of low profitability and thin capitalization in the defense industry in general and the shipbuilding industry in particular. We would

maintain that the response to this reality is behavior characterized more as entrepreneurial than managerial. The shipbuilding industry, no less than other segments of the defense industry, appears to be typical of this syndrome.

The Nature of Competition within the Industry

Observers of the industry have attempted to characterize the nature of competition within the industry as being simultaneously oligopolistic and monopsonistic. Oligopolistic because a limited number of firms appear to dominate the industry. Monopsonistic because there is but one customer: the U.S. government. Neither rubric appears to be appropriate.

First, the industry has suffered from a lack of demand since the early 1950's. There has never been sufficient business available at one time to exert any substantial upward pressure on prices. Given this set of circumstances, it would appear impossible for any one group of firms to fulfill the profitable price leadership role that is one of the hallmarks of oligopolistic competition. Instead, the market tends to behave more like an auction place characterized by close bidding procedures designed more to minimize losses than maximize profits. The shipbuilders have had little or no control over the market in which they operate. This would suggest, at first blush, that they are fully exposed to the inordinate and potentially unconstrained buying power of the U.S. government.

The facts of the marketplace do not support this contention. Serious attempts at cost control by the buyer in the marketplace when coupled with inadequate knowledge of price and cost relationships are not *prima facie* evidence of monopsonistic competition. The fact is that the Navy now has only a limited number of options

available to it in the purchasing of combatant ships. With the passing of time, these options are being narrowed such that any undue exertion of market power could lead to the further erosion of the shipbuilding base, an outcome that the Navy can ill afford. Thus, the Navy must reach a financial accommodation with its shipbuilding base, preferably by altering or modifying substantially the acquisition process in recognition of the impact on the shipbuilding base of the limited demand for U.S. built commercial vessels. The shipyards cannot survive without the Navy. Conversely, the Navy cannot survive without the yards. This reciprocal need would suggest that although classifying competition as oligopolistic or monopsonistic may be theoretically correct, it is factually misleading. Some better definition of the nature of the competitive process in the industry needs to be developed to more accurately portray its economic environment.

In support of the need for a redifinition of the nature of competition within the shipbuilding industry, two key points need to be reviewed.

1. The repair and conversion business appears to be the key profit generator within the industry. Ship construction per se appears to generate a heavy portion of final sales dollars, but very little (and oftentimes negative) profits. Because of their lack of capital intensity, many shipyards may be able to cut back on the scale of their operations and survive albeit as smaller business. This is especially so for those few yards that will not be forced to shutdown these next few years because of the current lack of demand for commercial ships. The shrinking supply base would then provide the surviving firms with more economic power than they now possess. At that time, if one wishes to be theoretical, they may then attain the type of market control that is generally associated with the term "ologopolistic." However, this is doubtful.

2. It is doubtful because any grasp of inordinate economic power by the shipyards can be moderated by the Navy by the simple expedient of expanding the scope of its own building, repair and conversion activities. This is not now politically palatable but might become so were the shipbuilding base to shrink so substantially so as to provide the surviving yards with inordinate economic power.

In a sense, then, the shipbuilding industry is unique in that the key buyer can also be a supplier as a partial offset against any inordinate shift in economic power towards the private sector. Conversely, the existing base has a construction capability not easily duplicated; i.e., the nuclear capability of Newport News and Electric Boat. Because of this, then, neither side... neither the Navy nor the private sector...can exert extreme competitive pressure on the other. Rather they must subsist side-by-side and reach some mutually beneficial economic and financial understanding. This may be the oligopoly referred to by some theorists but if it is, the Navy will, in fact, be forced to behave more as one of a series of congenial competitors than as an unruly or unconstrained buyer.

Classifying this industrial environment as either oligopolistic or monopsonistic, then, may lead to a misinterpretation of the facts and from this inappropriate, if not contradictory acquisition policies. This is not to suggest that a new theory or industry competition needs to be developed but rather that the implicit assumptions of the old theory need not guide future behavior.

PROFIT DRIVING FACTORS: THE COMMERCIAL SECTOR

The key factor driving profits in the commercial shipbuilding industry appears to be the lack of an orderly, sustained and adequate demand for U.S. built ships. From 1950 through 1975, for example, contracts for only 628 merchant ships of 1000 d.w.t. or over were placed in the United States. During that same period, the foreign owned shipping subsidiaries of American corporations purchased 1,948 ships abroad.

The lack of demand stems basically from two interrelated factors:

1) The high cost of building a ship in the United States.

2) The high cost of operating a U.S. flag ship.

The underlying cause of these high costs was, until recently, wage scales in the shipbuilding and sea transport industries, although the high cost of U.S. materials has also contributed to the shipbuilding dilemma. However, in the case of shipbuilding, the higher cost of labor and material is far from a complete explanation.

The incontrovertible fact is that the United States has not been motivated since the Civil War to develop an efficient shipbuilding and sea transport industry. We have tended to build too few ships over too long a period of time. The only exceptions to this rather general statement about levels of output are the periods of encompassed by World War I and II. Then the need to build both a commercial and combatant fleet of adequate size and capability was clearly in the national interest. The build-up of our fleet was done expeditiously. However, because our economy then was relatively independent of foreign trade, the postwar need to maintain a potentially high cost, large-scale peacetime maritime industry was negligible. Our post WWI and WWII dominance

of the maritime industry was thus ceded to others. Appendix D discusses this history in some detail. Unlike the aircraft industry, for example, the United States had no significant technological advantage in shipbuilding per se that it needed or wanted to maintain. This is because in the final analysis, shipbuilding is a relatively non-complex, construction-oriented business inconsistent with the high technology, mass production orientation typical of most American industry. Further, the industry was dominated by relatively small companies prior to WWII. The companies that elected to remain in the greatly diminished post WWII market for commercial ships were equally small when measured by American standards of corporate size. Thus, it appears safe to say that the industry did not have the political clout in peacetime to gain the type of legislation needed to protect its corporate interests.

Based on our analysis, the IRS Acts of 1962 are strident testimony to the industry's insignificant political power. This Act, as discussed in Appendix E, provided a disincentive in the early 1960's for American industry to either buy ships in the United States or to own ships that fly the American flag. The tax advantages then granted to the foreign-based shipping subsidiaries of American corporation more than offset any other incentive granted them by the highly competitive procedures instituted in the shipbuilding industry by Marad in the early post-war years. Because of the IRS Acts, it is our opinion that the industry never again had the motivation or the opportunity to show that it could compete worldwide. The Act effectively denied the industry entry into the market for the serial production of commercial ships, the one area where it had a potential advantage over foreign competition. Our analysis thus suggests that our foreign policy in the late '50s and early '60s was the root cause of the lessened demand for U.S. built ships and that high unit costs,

although important are more aptly defined as secondary contributing causes.

In all fairness, it should be noted that our foreign policy made sense in the late '50s and early '60s.

1. Our military posture then emphasized heavily the use of nuclear weapons. This was the period of massive retaliation. This posture de-emphasized the needs for the more conventional tools of war: planes, ships and tanks. It also deemphasized the need for the seaborne logistical support of our Allies. Nuclear confrontation, at best, calls for a 30 to 60 day war. A massive merchant fleet is not a concomitant part of this scenario. Given the comparative advantage then enjoyed by the "redeveloping" nations who were to become our key allies, it made great economic and political sense to cede control of this industrial sector to them, and especially to those nations; i.e., Japan and Germany, whose economies were then and now highly dependent on foreign trade. In peacetime a viable, commercially oriented shipbuilding base is not essential to a healthy domestic economy.

2. American wage scales in the 1950's and 1960's were significantly higher than those of the "redeveloping" nations whose economies had literally been destroyed by the war. There was no way that the American shipbuilding industry could then compete with foreign yards short of a continuation of WWII policies. With some 2000 ships in a reserve fleet and a military policy based on massive retaliation, this also made little or no sense.

3. In addition to the wage scale differentials, there was also the reality of an over-valued dollar. The U.S. could buy more abroad with the same amount of money of certain low technology commodities than it could buy in the United States. Ships were but one of those commodities. The $100 billion invested in overseas subsidiaries by large U.S. corporations is mute testimony to

the dollar's buying power in the 1950's and 1960's. The economic situation has now changed as has the geopolitics of sea power and raw material supply.

Thus, the IRS Acts of 1962 ratified into reality the relative and potentially temporary non-competitiveness of the U.S. shipbuilding industry. Unfortunately, it also tended to perpetuate this situation by driving overseas a heavy portion of the demand for ships by U.S. owners. If some of the 1,948 ships contracted for abroad had been built instead in the United States, the evidence now available to us suggests that the industry might well be more competitive today and, in light of the devaluation of the dollar and the escalation in the foreign wage scales, be close to self-sufficiency in whatever worldwide market for merchant ships may develop over these next three to ten years. The more cogent threat to the U.S. shipbuilding industry today is the potential migration of the shipbuilding industry from the re-developed to the underdeveloped nations; e.g., Korea.

This potential migration would, in our opinion, deliver the final coup de grace to the industry with respect to the market for commercial medium sized (30,000 to 50,000 d.w.t.) ships. The industry would be sustained by the very limited demand for Jones Act ships: the limited demand for ships generated by the cargo preference acts and, of course, combatants which, for security reasons, need to be built in the United States.

A change in foreign policy, or in military doctrine generated by new geopolitical interpretations could reverse this trend and bring back to the United States sufficient domestic demand to create a highly competitive U.S. shipbuilding industry. But this action is beyond the purview of either the Navy or Marad. In our opinion, the most that these two federal agencies can now do to create the environment for the full restoration of the U.S. ship-

building industry would be to explore the boundaries of maritime technology; e.g., ship design and related factors. If the U.S. shipbuilding industry can develop the type of technological advantage that our aircraft industry has heretofore enjoyed, the possibility exists for the private sector renaissance of an industry vital to our national interests in a world economy.

PROFIT DRIVING FACTORS: THE NAVY SECTOR

Contrary to general opinion, Navy construction business appears to be no more or less profitable for the shipyards than commercial business. This appears to be the result of the fact that Navy contracts normally call for the serial construction of ships that are reasonably similar to one another. Serial production allows the yards to gain the benefits of the so-called "learning curve." Further, since so few yards are now qualified to build Navy ships, they do have some ability to exert upward pressure on the price paid by the Navy. Part of this pressure--if that is an apt way to characterize it--is no doubt derived from the fact that the cost of ship construction in Navy yards has generally been greater than that in commercial yards so that accurate cost comparisons are not easily derived. Also, for the time being at least, by Congressional order, all combatants for the Navy must be built in private yards, once again reducing the cost pressure that the Navy can exert on its vendors.

In a sense, and despite the awe-inspiring size of the claims filed against the Navy by three of its prime contractors, the present situation represents an uneasy truce between the Navy and the shipyards. The Navy needs the ships; the yards need the business. Particularly, the yards need the repair and conversion business generated by the Navy. The limited evidence available to us suggests that this type of work is more profitable than construction. Furthermore, the scheduling of this work is more orderly and substantially more predictable for time and price than is the market

for new ships. Thus, despite the derogation of the Navy by some of its key shipbuilders, Navy business tends to be as profitable as commercial work.

In this regard, it should be noted that the Navy's view of the contractor/military service relationship appears to be substantially different than that of its sister services. Ships are the only major weapon system still purchased on the basis of Firm Fixed Price Contracts. Most aircraft, for example, are acquired through the medium of a cost plus contract, or a variant of a cost plus contract. Cost plus contracts shift the business risk from the seller to the buyer and are regarded by the Air Force as de riguer in the acquisition of aircraft. Much more complex and costly ships are still purchased on the basis of Firm Fixed Price contracts, the conventional business technique for shifting business and contract risk from the buyer to the seller. The massive, multi-billion dollar contract for five LHAs and 30 DD963 destroyers placed in the late '60s by the Navy with Litton is a classic case of the use of a Firm Fixed Price contract on a massive contract.

In addition, the Navy does not generally follow the practice of both the Air Force and the Army in providing its shipbuilders with government owned plant or manufacturing equipment. Excluding progress payments, the Navy shipbuilder is strictly on his own financially and resource wise. Because of this, the Navy-shipbuilder relationship is an anomaly within the more generalized context of DOD/contractor relationships. An additional anomaly of potential consequence to the Navy/contractor relationship is the Navy's latent ability to build its own ships in its own yards. No other military service has the ability to construct or produce in its own plant and with its own personnel, the centerpiece of its weapons systems.

Assigning weights to these two factors--the continued use of Firm Fixed Price contracts and the Navy's ability to build ships in its own facilities--is, of course, impossible. It appears intuitively evident, however, that these two factors taken together serve to moderate profit rates within the industry so that shipbuilding per se is the least profitable component of the defense industrial base irrespective of the financial measures used. This last statement is subject to but one caveat: that we view the industry as a whole and do not isolate out the financial strength of the individual shipbuilding firm. The more profitable firm within the industry tends to concentrate on commercial business. Conversely, the results of the two firms who concentrate primarily on Navy business can be regarded as reasonably salutory. For the shipyard which understands DOD contracting procedures and has a concomitant degree of market control; i.e., product specialization, the Navy is a reasonably good customer if profit rates are used as the key criterion. Because of this, the onus of industry profitability should not be placed on the Navy's shoulders.

PROFIT DRIVING FACTORS: SUMMARY

To return to an earlier point, the key reason for the relatively low profits of the U.S. shipbuilding industry is the lack of an orderly sustained, and predictable demand for U.S. built merchant vessels. The root cause for this lack of demand can, in our opinion, be found in the foreign policy imbedded in the IRS Acts of 1962, although the current impact of these Acts on the shipbuilding base is minimal. However, they are the basis for much of our current history.

The Navy has moderated somewhat the impact of this Act by its acquisition of combatants from the private sector but not sufficiently enough to influence the general character of the

industry. It has done very little to ameliorate industry conditions. Conversely, it can do little. The major action that it can take would be to switch out of its current reliance on Firm Fixed Price contracts and move towards the more generalized use in shipbuilding of cost plus contracts. This should not be expected to generate more profit for the industry; that is not the intent of cost-oriented contracting. Rather, by shifting a heavy portion of the business risks from seller to buyer, this contract form should serve to rationalize the need for maintaining industry capabilities, a matter of utmost urgency once a wartime scenario is anticipated. The appropriate use of correctly structured cost plus contracts can provide the incentive for the industry to undertake base preserving activities such as labor force stabilization and capital investment policies. Firm Fixed Price contracts in an environment characterized by low and unstable demand will not create this environment.

CHAPTER IV: FOOTNOTES

1. Profit 76 can be used as support for the contention that the defense industry earns lower profits than American industry in general. The one caveat here is that the measure be profit on sales. When profit is related to owner's equity (net worth), a different picture can emerge. Appendices B and C contain data on the return to capital on the defense business undertaken by General Dynamics. Pretax returns of from 40% to 60% are reported. Similar evidence was found on firms such as Lockheed, Fairchild Industries, and other defense contractors. One or two situations must then be contemplated: that they are highly profitable firms or thinly capitalized. Since profits on sales are low, the high return reported on equity can only be the result of thin capital bases. To offset this less than optimal financial situation, most defense contractors rely on periodic progress payments to meet their capital needs.

2. Once again, generalizations are dangerous. It can be alleged that Newport News can exert monopoly pressure on the Navy on the construction of nuclear powered aircraft carriers. No other firm in the United States has the capability now of producing so large and complex a ship. The countervailing power here, then, is more political than economic: Congress can simply refuse to appropriate the money for large scale nuclear carriers. In the same vein, it can be alleged that Newport News and Electric Boat possess true oligopolistic power on the construction of nuclear submarines. This would now appear to be true, suggesting some modification of the comments in the body of our report based on more discrete "product line" analyses.

APPENDIX A: NOTE ON THE CONGLOMERATES

Since the late 1950's, the industry's structure has undergone two major transformations:

1. With the exception of the Todd Shipyards, virtually all of the surviving major shipyards in the United States which were not part of major corporations; e.g., Sun and Bethlehem, have been acquired by conglomerates. A number of medium-sized yards were also acquired by smaller conglomerate type firms, but the impact of this group of yards on the industry is not significant to this report.

2. The industry has become more concentrated. Three firms, Newport News, General Dynamics, and Litton, are now responsible for the bulk of the industry's order volume. In 1976, for example, they accounted for $2.3 billion of total industry sales of $5.2 billion. These three firms, plus Bath Ironworks, account for virtually all of the Navy's purchase of combatants.

The entry into the industry of the conglomerates appears to be a mixed blessing.

On the negative side, it would appear that the conglomerates viewed the shipyards as bargain priced "targets of opportunity."

1) General Dynamics acquired the Fore River Shipyards (Bethlehem Steel) for $5,000,000 in cash.

2) Litton Industries acquired the Ingalls Shipyards for some $5,700,000 of its common stock.

3) Lockheed purchased the Puget Sound Yard for some $6,600,000 in cash, and $1,600,000 of its common stock for a total acquisition price of $8,200,-000.

4) Ogden purchased Avondale for some $4,000,000 in cash plus a promissory note for $10,000,000 for a total acquisition price of $14,000,000.

5) Tenneco acquired the Newport News Shipbuilding Company, then the largest factor in the industry for approximately $123,600,000. Of this amount, some $21,600,000 was represented by a stock swap. The balance of the purchase price was accomplished with a 25 year 7% debenture. This was the only acquisition that may be regarded as involving a substantial sum of money.

The one exception to the conglomerate rule was Bath Iron Works which, instead of being acquired by a conglomerate, became one itself by acquiring the Congoleum Corporation. The total consideration here was approximately $33,000,000. The instrument used by Bath to acquire Congoleum's stock was a convertible preferred stock.

The apparent motivation for the purchase of the shipbuilding firm by the conglomerates was to provide relatively inexpensive entry into an industry characterized by a high sales/invested capital ratio. Although not especially profitable when measured by a profit/sales ratio, the labor intensive nature of shipbuilding and the relatively minor sums of money needed for incremental investments in plant and equipment provides an environment in which the profit rate on invested capital can be quite substantial.

In addition, it appeared in the mid 1960's that the industry would enjoy a renaissance sparked by Navy demand. The substantial F.D.L. program as well as the nine ship L.H.A. and thirty ship DD963 program was in the offing. Because these programs would generate massive sales, they were of great interest to the growth oriented conglomerate. Since any analysis of the industry would have then revealed the need for minimal investments in fixed assets, excellent cash flow characteristics, and good to excellent returns on invested capital the profit potential for the acquisition minded conglomerate was excellent. When coupled with the

bargain prices for which most yards were then available, they became intriguing targets of opportunity for the conglomerates. If the acquisition price by the conglomerate is used as an evaluation measure, the otherwise desultory earnings of many of the shipyards take on a different perspective. The only yard that sold for a high price was Newport News. The evidence available to us strongly suggests that Tenneco recovered much of its initial cash investments in Tenneco by failing to reinvest depreciation expenses in new plant and equipment. (See Appendix B) It was not until 1973 that Tenneco began reinvesting substantial sums of money in new plant and equipment. Although more conventional modes of financial analysis might suggest that the industry is not overly profitable, a capital budgeting view derived from the acquisition price would tend to suggest the opposite.

Notwithstanding the above, the industry is now a poor investment vehicle characterized by an inadequate and unpredictable demand for new ships. The business environment these past few years has been one of high risk and low returns.

It is this negative perspective which gives rise to our earlier statement that the conglomerate takeover of much of the major shipbuilding capacity in the United States was a blessing in disguise. Without the underlying financial strength of the conglomerates, a number of shipbuilding firms might not have survived the disorderly market that has obtained these past ten years. Without the access to capital provided by the parent, a number of firms could not have bid on what little business was available to them. Thus, an earlier statement of the Federal Trade Commission that not all conglomerate acquisition resulted in an effort to boost efficiency and profits or to enhance resource allocation, must now be tempered by the more recent evidence of conglomerate support of the shipbuilding industry.

Conglomerate ownership has benefited the industry by providing it with access to both the short term and the long term capital that it needed. From 1970 through 1976, over $1.5 billion in funds was committed to plant and equipment modernization and expansion. Unfortunately, a heavy portion of this money was spent in anticipation of the major shipbuilding program called for by the Merchant Marine Acts of 1970. This Act projected a ten year 300 ship program. To date, contracts for only 62 ships have been negotiated leaving the industry with excess capacity and thin order books. Unless there is a rapid turn around in the demand for U.S. built merchant ships, fully 50% of the 15 or 16 larger shipyards in the United States may have to close their doors between now and 1981. Conversely, should national policy vis-a-vis the maritime industries undergo a change of direction, these yards could be reopened because of the financial flexibility of the conglomerate parent.

As noted earlier, the conglomerates minimized the cost of entry into the shipbuilding industry by acquiring existing firms, most of which were then undercapitalized. These acquisitions shared certain characteristics (See Table 5):

1) The acquired shipbuilding companies generally enjoyed profitable growth rates and good cash flows.

2) The transaction (18.6) multiple of the only public shipbuilding company, Newport News, was higher than the purchaser's book value or stock market P/E. In contrast, the transaction multiple of the large private shipyards such as Ingalls and Avondale were lower than the buyer's price/earnings ratios and book values.

3) The conglomerates were willing to accept dilution of their own shares to make the deal. Cash tenders of $15.5 million represented only 9.6% of the total purchase price of the various yards.

TABLE 5

COMPARISON OF MAJOR CONGLOMERATE PURCHASES OF PRIVATE SHIPYARDS: 1959-1968

COMPANY	PURCHASE DATE	TERMS	TRANSACTION VALUE	BOOK VALUE (per common stock)	P/E	STOCK MARKET P/E (Standard & Poor's)	MARKET VALUE (000)	COMMON SHARES OUTSTANDING	STOCK PRICE[1]
Lockheed (Puget Sound)*	4/1/59	Issued 44,290 shares of capital stock plus $6,641,000 in cash for Puget Sound's stock	$ 8,191,150	24.36	25.7	19.7	$ 211,519	6,314,000	35
Ogden (Avondale)*	3/30/59	Ogden bought 50,000 shares of stock at $279.60 a share for $3.98 million in cash and a $10 million promisory note bearing an annual 6% interest rate	$ 13,980,000	18.78	23.7	21.4	$ 657,404	4,833,857	136
Litton (Ingalls)*	10/31/61	Litton issued, in a pooling of transaction arrangement, 57,144 shares of common stock	$ 7,771,584	21.27	43.1	19.7	$ 109,435	4,835,836	22 5/8
General Dynamics (Fore River)*	12/31/63	Cash purchase of $5 million	$ 5,000,000	19.37	5.1	18.3	$ 233,937	9,000,000	29 5/8
Connoleum (Bath)*	3/1/68	Reverse merger: Connoleum shareholders received one share of Bath $5 convertible preferred series A for each three shares of Connoleum common. The conversion ratio was 2.43 shares of common for each share of the preferred	$ 32,508,000	24.17	16.8	16.1	$ 62,934	2,124,000	29 5/8
Tenneco (Newport News)*	9/4/68	Tenneco issued a $60 principal amount 7%, 25-year debenture and ½ share of common stock for each share of Newport News common stock. About 835,000 shares of Tenneco common and $100.2 million in debentures were involved in the exchange	$123,640,590	17.54	12.6	17.0	$1,474,875	54,625,000	27

* Seller
** Bath had a 50% interest in Connoleum prior to the merger.
1 Stock prices of publicly traded sellers was 23 7/8 for Connoleum and 63 for Newport News.

Sources: Annual Reports, Mergers & Acquisitions, Official Company Records.

5) The transaction ranged from 2% to 10% of the buyer's total market value.

6) At the time of the acquisition or merger the conglomerates tended to be in a better position than the average Standard and Poor 500 company comparison as measured by cash flow and profits.

7) The original investments of most of the major conglomerates were recouped either in later profit growth or earnings power.

The dominance of the shipbuilding industry by conglomerates creates several financial reporting problems: (1) results of the shipbuilding subsidiaries and the parent are often unsegregated so that isolating out the results of the shipbuilding operation may be especially difficult, and (2) company classification based on industry becomes extremely tenuous with the result that reported industry wide data more often than not may lack information on important companies.

With respect to the second problem, there are firms such as Boeing and F.M.C. who are in the shipbuilding industry but who, nonetheless, are rarely ever considered in a review of the industry. Although the failure to properly account for firms such as these is not critical to this study, their exclusion (and that of other companies such as Trinity/Equitable) may distort somewhat the results of this analysis.

The more critical problem is the financial one that is created by inconsistent reporting practices on income and balance sheet presentations. Some companies book sales only upon completion and delivery of a ship; others use a percentage of completion basis. Because the shipbuilding cycle is a lengthy one, financial charges, and other relevant financial data is not normally provided the public by the parent so that there is no way of appropriately calculating the overall contribution to overhead and profit generated by the

shipbuilding subsidiary. Based upon our general knowledge of the defense industry and the more widely used techniques for allocating corporate overhead and other expenses, shipyard profits are, in all likelihood, somewhat understated. In addition, it is also likely that profits on Naval ships are somewhat more understated than profits on merchant vessels. Appendices B and C provide some evidence on this matter and form the basis for our earlier statement with suggested that two financial views of the industry need to be taken:

- The more conventional one that relates profits to sales and the capital base of the shipbuilding subsidiary acquired by the conglomerate.
- The equally realistic but less conventional measure that relates shipbuilding profits to the costs to the conglomerate of acquiring this stream of profits.

That some of the conglomerates failed to manage their newly acquired subsidiaries profitably does not detract from the inherent profitability of their investment in shipbuilding capacity. Neither the Navy nor Marad nor the industry, we would maintain, should be held responsible for the inability of a limited number of firms to gain the profits that they anticipated when they bought into the industry. Notwithstanding this, it is still evident that the shipbuilding industry is only marginally profitable, and that there are vast and often unpredictable year-to-year swings in industry sales and profits.

The profitability problem, however, can only be solved by creating an environment in which the Navy and the industry have full faith and confidence in one another. In order to create this environment we now believe that there must not only be a change in contractual form but that the Navy and industry must jointly

agree on milestone standards, cost, and financial reporting procedures. To accomplish this, we believe that a joint Navy/ Industry committee should be formed dedicated to the task of defining mutually acceptable financial and cost accounting procedures as the first step in a long-term disengagement process. The alternative to this is the public sector ownership of the greater bulk of our shipbuilding capacity.

APPENDIX B: NOTE ON NEWPORT NEWS

Because of its overall importance to the study, we also attempted to validate through an analysis of Renegotiation Board data the figures on Newport News derived from its 10-Ks and annual reports. Exhibit B-1 is a transcript of the data submitted to the Board by Newport News. The firm shows a substantial loss on Navy business in 1968, the year it was acquired by Tenneco. Public reports (Exhibit B-2) show shipbuilding profits for this year, albeit on a different sales volume. Based on this, we hypothesized either (1) a Navy loss offset by commercial gain or (2) differing accounting periods. Because we could not clarify the matter and because the data suggested the type of reporting conflict that might well be caused by a change in accounting periods, we used the data for 1968 set forth in Exhibit I.

Although we recognize the impact on Newport News if it did in fact sustain a loss for this period, it once again is not significant enough a variation to affect the analysis in the body of our report.

Exhibit B-1, in addition to the above, provides significant data on Newport News' investment in government business and the pretax returns earned on these investments.

EXHIBIT B-1: Tenneco - Renegotiation board data: Source RB 1 and screening reports - (Dollars in 000,000's)

YEAR	SALES	PROFIT	RETURN ON SALES	RETURN ON NET WORTH	RETURN ON CAPITAL	RENEGOTIABLE NET WORTH
1951*	$ 66.5	$ 3.6	$ 5.4	$unknown	$unknown	$unknown
1952	98.5	4.6	4.7	"	"	"
1953	106.8	9.6	9.0	"	"	"
1954	101.4	10.2	10.0	"	"	"
1955	99.2	9.6	9.7	"	"	"
1956	67.8	6.4	9.4	"	"	"
1957	89.1	7.5	8.4	"	"	"
1958	79.6	(0.3)	-	-	-	-
1959	128.0	7.2	5.6	unknown	unknown	unknown
1960	146.2	11.4	7.8	"	"	"
1961	227.9	10.5	4.6	"	"	"
1962	235.4	11.0	4.0	16.8	11.7	65.2
1963	201.5	11.6	5.8	17.5	12.2	66.4
1964	202.1	13.0	6.4	22.0	15.0	60.2
1965	238.8	15.2	6.4	22.0	15.0	69.5
1966	223.9	8.0	3.6	11.0	7.7	74.9
1967	254.5	5.7	2.3	8.0	5.0	73.2
1968	236.0	(21.5)	-	-	-	76.0
1969	264.9	15.7	5.9	24.4	13.6	64.3
1970	317.9	24.8	7.8	unknown	unknown	unknown
1971	323.8	20.2	6.2	"	"	"
1972	419.7	15.4	3.7	"	"	"
1973	455.7	13.7	3.0	"	"	"
1974	436.3	19.2	4.4	"	"	"
1975	unknown	unknown	unknown	"	"	"
1976	"	"	"	"	"	"

* Data begins with the renegotiation board act of 1951.

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SECURITIES AND EXCHANGE COMMISSION
Washington, D. C. 20549

REC'D W S.E.C.

MAR 30 1972

(Not Received)

FORM 10-K

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the Fiscal Year Ended December 31, 1971 Commission File No. 1-4101

TENNECO INC.
(Exact name of registrant as specified in its charter)

Delaware (State or other jurisdiction of incorporation or organization)	74-1056569 (I.R.S. Employer Identification No.)
Tenneco Building, Houston, Texas (Address of principal executive offices)	77002 (Zip Code)

Registrant's telephone number, including area code: (713) 229-2131

Securities registered pursuant to Section 12(b) of the Act:

Title of Each Class in Order of Preferences	Name of Each Exchange On Which Registered
First Mortgage Pipe Line Bonds, 8-1/4% Series due 1991.	New York Stock Exchange
Ten Year 6% Debentures due 1979.	New York Stock Exchange
Preferred Stock; par value $100 per share; issued in 14 series with dividends ranging from 4.10% to 7.25%; cumulative dividends.	Philadelphia-Baltimore-Washington Stock Exchange
Second Preferred Stock; par value $100 per share; issued in 5 series with dividends ranging from 4.50% to 5.36%; cumulative dividends; 3 series with conversion provisions.	Philadelphia-Baltimore-Washington Stock Exchange
Preference Stock; without par value; $25 stated value, issued in 1 series with a dividend rate of $5.50 cumulative dividends; conversion provisions.	New York, Pacific Coast Stock Exchange
Common Stock; par value $5 per share.	New York, Midwest, Pacific Coast, The Toronto Stock Exchanges
Warrants to purchase Common Stock, exercisable through April 1, 1979.	American Stock Exchange
Warrants to purchase Common Stock, exercisable through November 1, 1975.	New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act:

None

Indicate by check mark whether the registrant has filed all annual, quarterly and other reports required to be filed with the Commission within the past 90 days and in addition has filed the most recent annual report required to be filed.

APR 1972 Yes X. No ___.

CONTRIBUTIONS OF MAJOR BUSINESSES

The following table summarizes by each major business of the Company for the years 1967, 1968, 1969, 1970 and 1971, revenues and income before interest, federal income taxes, outside stockholders' interest and extraordinary items. While the significance of the results shown in the table is materially affected by stating income before interest expense and federal income taxes, in the opinion of the Company it is impracticable to allocate such interest expense or taxes in a manner which will fairly reflect the contributions of such major businesses to its net income. Interest expense amounted in the aggregate to $81,292,000 in 1967, $84,466,000 in 1968, $100,072,000 in 1969, $131,756,000 in 1970 and $138,595,000 in 1971 and federal income taxes amounted in the aggregate to $13,923,000 in 1967, $30,013,000 in 1968, $27,488,000 in 1969, $30,030,000 in 1970 and $55,569,000 in 1971.

(Expressed in thousands)

	Net sales, operating revenues and other income (net)					Income before interest, federal income taxes, outside stockholders' interest and extraordinary items				
	1967	1968	1969	1970	1971	1967	1968	1969	1970	1971
Manufacturing:										
Newport News Shipbuilding*..	$ -	$ 97,595	$ 314,144	$ 359,732	$ 380,810	$ -	$ 4,486	$ 21,057	$ 29,430	$ 23,394
Walker Manufacturing.....	86,987	100,555	112,058	134,584	154,501	13,420	19,680	21,872	27,694	33,249
J. I. Case.....	357,145	382,661	445,836	384,647	446,668	7,173	11,422	12,700	3,179**	13,074
Watkins-Johnson (sold in May 1968).....	21,049	8,968	-	-	-	4,673	1,706	-	-	-
Natural Gas Pipelines.....	482,533	532,012	561,142	580,360	663,902	109,577	118,581	118,826	120,815	160,521
Oil Production, Refining, and Marketing.....	374,489	433,096	464,365	516,003	579,384	49,172	54,101	56,104	77,606	91,133
Chemicals.....	222,093	241,516	251,390	251,360	259,932	22,302	22,758	19,833	19,290	14,165
Packaging.....	221,478	240,338	259,514	251,821	262,601	20,410	22,455	22,393	18,087	18,631
Agriculture, Land Development.	78,506	75,836	83,910	125,360	144,603	5,271	14,961	20,770	22,196	28,056
Investments.....	15,710	22,328	22,627	26,562	27,540	10,417	10,537	4,651	6,109	1,592
Intergroup Sales.....	(12,688)	(12,980)	(17,581)	(37,021)	(36,362)	-	-	-	-	-
Total.....	$1,847,302	$2,121,925	$2,497,405	$2,593,428	$2,883,579	$ 242,415	$ 280,687	$ 298,286	$ 324,406	$ 383,815

* Results of Newport News Shipbuilding have been included since date of acquisition, September 4, 1968.

** In 1970 J. I. Case reduced production of agricultural equipment substantially to eliminate excess dealer inventories, resulting in increased unit cost, and lower profit margins.

TENNECO INC. AND CONSOLIDATED SUBSIDIARIES

SCHEDULE V - PLANT, PROPERTY AND EQUIPMENT, INCLUDING INTANGIBLES (Note)
(Expressed in thousands)

Column A Classification	Column B Balance at December 31, 1969	Column C Additions at Cost	Column D Retirements or Sales	Column F Balance at December 31, 1970	Column C Additions at Cost
GAS TRANSMISSION:					
Intangibles	$ 6,347	$ 28	$ -	$ 6,375	$ 97
Products extraction	13,503	1,597	146	14,954	72
Storage	48,185	1,842	243	49,784	7,201
Transmission	1,792,352	46,067	10,174	1,828,245	57,226
General	24,498	1,149	866	24,781	2,986
Construction work in progress	28,248	2,856	-	31,104	3,867
	$ 1,913,133	$ 53,539	$ 11,429	$ 1,955,243	$ 71,449
PRODUCING AND UNDEVELOPED OIL AND GAS	693,631	206,468	36,573	863,526	119,796
PRODUCING LEASEHOLD INTERESTS, SUBJECT TO REDETERMINATION	159,464	-	-	159,464	-
REFINING AND MARKETING	206,241	29,5[illegible]	2,910	232,863	21,532
PACKAGING	265,341	26,096	5,939	285,498	14,311
CHEMICAL	244,046	6,499	11,355	239,190	13,417
MACHINERY, EQUIPMENT AND SHIPBUILDING	373,129	37,801	11,884	399,046	32,961
LAND USE AND OTHER	92,090	25,613	23,397	94,306	25,539
CONSTRUCTION WORK IN PROGRESS - OTHER	241,553	(55,551)	-	186,007	(8,945)
	$ 4,188,633	$ 329,997	$ 103,487	$ 4,415,143	$ 299,060

NOTE: Retirements of gas transmission plant are priced at original cost, and retirements of other properties are priced at cost.

Schedule V
Consolidated

TENNECO INC. AND CONSOLIDATED SUBSIDIARIES

PLANT, PROPERTY AND EQUIPMENT, INCLUDING INTANGIBLES (Note)
(Expressed in thousands)

Column A	Column B	Column C	Column D	Column F	Column C	Column D	Column F
Classification	Balance at December 31, 1969	Additions at Cost	Retirements or Sales	Balance at December 31, 1970	Additions at Cost	Retirements or Sales	Balance at December 31, 1971
.....	$ 6,347	$ 28	$ -	$ 6,375	$ 97	$ -	$ 6,472
.....	13,503	1,597	146	14,954	72	29	14,997
.....	48,185	1,842	243	49,784	7,201	142	56,843
.....	1,792,352	46,067	10,174	1,828,245	57,226	7,304	1,878,167
.....	24,498	1,149	866	24,781	2,986	1,445	26,322
progress	28,248	2,856	-	31,104	3,867	4,050	30,921
	$ 1,913,133	$ 53,539	$ 11,429	$ 1,955,243	$ 71,449	$ 12,970	$ 2,013,722
PED OIL AND GAS	693,631	206,468	36,573	863,526	119,796	41,328	941,994
TERESTS, SUBJECT TO REDETERMINATION ..	159,464	-	-	159,464	-	-	159,464
.....	206,241	29,53	2,910	232,863	21,532	2,550	251,845
.....	265,341	26,096	5,939	285,498	14,311	6,425	293,384
.....	244,046	6,499	11,355	239,190	13,417	6,489	246,118
ND SHIPBUILDING	373,129	37,801	11,884	399,046	32,961	10,628	421,379
.....	92,090	25,613	23,397	94,306	25,539	3,887	115,958
ROGRESS - OTHER	241,553	(55,551)	-	186,007	(8,945)	-	177,062
	$ 4,188,633	$ 329,997	$ 103,487	$ 4,415,143	$ 290,060	$ 84,277	$ 4,620,926

gas transmission plant are priced at original cost, and
f other properties are priced at cost.

TENNECO INC. AND CONSOLIDATED SUBSIDIARIES

SCHEDULE VI - RESERVES FOR DEPRECIATION, DEPLETION AND AMORTIZATION OF PLANT, PROPERTY AND EQUIPMENT (Note)
(Expressed in thousands)

Column A	Column B	Column C				Column D			Column E
		Additions				Deductions from Reserves			
Description	Balance at Beginning of Period	Charged to Income	Charged to Clearing Accounts	Salvage	Other	Property Retired	Cost of Removal	Other	Balance at Close of Period
YEAR ENDED DECEMBER 31, 1970:									
Gas transmission -									
Intangibles	$ 351	$ 52	$ -	$ -	$ -	$ -	$ -	$ -	$ 403
Products extraction	6,431	434	-	17	-	146	3	-	6,733
Storage	9,305	1,185	-	35	-	243	9	-	10,273
Transmission	582,827	56,687	-	1,920	28	10,174	267	-	631,021
General	9,869	140	1,750	289	5	866	-	-	11,187
	$ 608,783	$ 58,498	$ 1,750	$ 2,261	$ 33	$ 11,429	$ 279	$ -	$ 659,617
Producing and undeveloped oil and gas, including producing leasehold interests subject to redetermination	204,850	64,056	161	5,863	25	36,573	313	135	238,934
Refining and marketing	75,315	9,130	278	678	991	2,910	35	80	83,367
Packaging	126,033	12,639	-	(160)	-	5,294	-	-	133,218
Chemical	88,520	13,738	-	-	517	10,042	-	660	92,073
Machinery, equipment and shipbuilding	158,692	21,068	-	-	4,710	8,530	-	-	175,940
Land use and other	26,763	1,487	2,031	291	2,461	6,326	-	-	26,707
	$1,288,956	$ 180,616	$ 5,220	$ 8,933	$ 8,737	$ 81,104	$ 627	$ 875	$1,409,856
YEAR ENDED DECEMBER 31, 1971:									
Gas transmission -									
Intangibles	$ 403	$ 55	$ -	$ -	$ -	$ -	$ -	$ -	$ 458
Products extraction	6,733	520	-	1	-	29	1	-	7,224
Storage	10,273	1,505	-	156	99	142	26	-	11,865
Transmission	631,021	64,028	-	1,511	34	7,304	1,618	-	687,672
General	11,187	151	1,768	387	5	1,446	2	-	12,050
	$ 659,617	$ 66,259	$ 1,768	$ 2,055	$ 138	$ 8,921	$ 1,647	$ -	$ 719,269
Producing and undeveloped oil and gas, including producing leasehold interests subject to redetermination	238,934	65,870	530	2,300	7,558	38,909	464	1,438	274,381
Refining and marketing	83,367	9,537	301	874	83	2,550	35	(30)	91,607
Packaging	133,218	12,985	-	-	-	5,760	-	-	140,443
Chemical	92,073	13,746	-	-	-	3,413	-	-	102,406
Machinery, equipment and shipbuilding	175,940	22,449	-	-	-	9,611	-	110	188,668
Land use and other	26,707	1,867	2,662	802	1	3,808	-	110	28,122
	$1,409,856	$ 192,713	$ 5,262	$ 6,031	$ 7,780	$ 72,972	$ 2,146	$ 1,628	$1,514,896

NOTE: Reference [illegible] to Notes [illegible] and 10 [illegible] financial statements [illegible] for [illegible] provisions [illegible] depreciation, depletion and amortization [illegible]

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APPENDIX C: NOTE ON ELECTRIC BOAT AND GENERAL DYNAMICS

As noted in the body of our report, we were unable to locate any reliable and consistent data on the shipbuilding activities of General Dynamics (Electric Boat and Quincy) after 1952. Prior to that date, Electric Boat was a separate entity and the figures used for that period were obtained from public records, primarily Dow-Jones archives.

The earliest public track of the data available to us was the information reported after 1968 in the 10-Ks filed with the Security and Exchange Commission. This is the basis of the data used in Exhibit II. It was used with some sense of misgivings because although we found other data, it was impossible to reconcile this data because of its incompleteness and differing accounting (but legitimate) practices.

Exhibit C-1 for example shows operating losses from "marine" business of $82.6 million in 1968 versus the $92.6 million used in Exhibit II. In addition a $7,200,000 loss is shown in Exhibit II for 1971 versus the $8.6 million shown in Exhibit C-1. We did not regard this difference as significant to our study. G. D. obviously lost substantial amounts of money building ships. From the perspective of the study, $5,000,000 variance on the loss reported is of no significance.

We similarly elected to reject Exhibit C-2 which reduces the shipbuilding loss from $92.6 million pre-tax to $45.4 million net of tax inasmuch as no full explanation for the changes could be located. And, once again, because even a change of this "magnitude ($25-30,000,000) would not alter the conclusions drawn from our overall analysis of Exhibit II.

We did not attempt to determine if these were commercial or Navy construction created losses. The data made available to us from the Renegotiation Board (Exhibit C-3) would suggest that the

losses resulted from Navy business if the companies presentation of its operating results (the Screening Report) is regarded as valid. If the post-review calculations are accepted as correct (RB67 data), and then the company suffered no loss in 1968 and 1969 on renegotiable, i.e., defense business.

Because the Freedom of Information Act prohibits access to any more data than shown in Exhibit C-3, we did not pursue the matter further but accepted the 10-K data as a reasonably valid interpretation of the results of G.D.'s shipbuilding activities.

Before turning away from this data, special attention should be drawn to the pretax earnings on sales, net worth and capital recorded on defense business by this contractor from 1958 through 1969. This particular statement supports our more general thesis on the "thin capitalization" of many large defense oriented contractors.

Exhibit C-1

Source: SEC Form 10K

	Year Ended December 31				
	1967	1968	1969	1970	1971
	(Dollars in Thousands)				
Net sales:*					
Military aircraft and space systems	$1,331,081	$1,817,753	$1,666,088	$1,289,008	$ 936,748
Commercial aircraft	25,555	20,266	31,912	39,418	82,321
Tactical missiles	157,872	192,197	192,709	147,257	115,243
Marine	376,833	276,457	269,428	372,363	351,014
Telecommunications	117,163	122,036	126,455	135,612	138,467
Data products	-	13,300	26,308	27,659	22,782
Material Service and resources	148,986	151,946	195,855	212,326	222,226
Discontinued activities	95,846	68,283	-	-	-
Total	$2,253,336	$2,662,238	$2,508,755	$2,223,643	$1,868,801
Operating earnings (losses) (1):					
Military aircraft and space systems	$ 68,336	$ 82,841	$ 78,308	$ 24,622	$ 36,927
Commercial aircraft	2,851	(336)	(13,738)	(7,950)	(7,380)
Tactical missiles	10,079	4,615	4,218	(31,310)	(2,015)
Marine	(18,317)	(82,599)	(96,688)	5,481	(8,629)
Telecommunications	11,175	13,123	14,969	15,005	15,093
Data products	-	103	(22,406)(2)	(23,804)	641
Material Service and resources (less minority interest)	8,662	12,939	33,809 (3)	24,156	22,323
Discontinued activities	(752)	6,015	-	-	-
Total	$ 82,034	$ 36,701	$ (1,528)	$ 6,200	$ 56,960
Income (deductions) not allocated to lines of business, net (4)	2,455	5,186	(10,276)	(13,037)	(20,478)
Pretax earnings (loss) before extraordinary items	$ 84,489	$ 41,887	$ (11,804)	$ (6,837)	$ 36,482

*Excluding interdivision and intercompany sales.

NOTES:

(1) Reflects allocation of corporate general and administrative expenses susceptible of allocation to lines of business.

(2) Includes a $14,127,000 reduction of earnings resulting from a retroactive change from deferral to expense basis of accounting for certain administrative, marketing and development costs.

(3) Includes a $12,432,000 addition to earnings resulting from the retroactive application of a change from accelerated methods of depreciation to the straight-line method by the domestic resources subsidiaries.

(4) Includes interest expense and income and other items of a general corporate nature.

Exhibit C-2

Spurce: SEC Annual Report

Summary of Sales and Earnings by Lines of Business	1970	1969 (1)
	Dollars in thousands	
Sales:		
Military aircraft and space systems	$1,289,008	$1,666,088
Commercial aircraft	39,418	31,912
Tactical missiles	147,257	192,709
Marine	372,363	269,428
Telecommunications	135,612	126,455
Data products	27,659	26,308
Resources	212,326	195,855
	$2,223,643	$2,508,755
Operating Earnings (Losses), net of taxes:		
Military aircraft and space systems	$ 12,580	$ 38,036
Commercial aircraft	(3,889)	(4,931)
Tactical missiles	(15,9[illegible])	1,906
Marine	2,927	(45,374)
Telecommunications	7,814	7,686
Data products	(12,095)	(10,573) (2)
Resources (less minority interest)	14,862	20,046 (3)
Total	$ 6,296	$ 6,796
Deductions (Income) Net Allocated, net of taxes:		
Interest expense	$ 11,320	$ 8,360
Other, net	1,482	(4,095)
Net Earnings (Loss)	$ (6,506)	$ 2,531

Notes:
(1) 1969 amounts have been restated to conform to the 1970 presentation.
(2) Includes a $[illegible] (after tax) reduction of earnings resulting from a retroactive change made in 1969 from deferral to expense basis of accounting for certain administrative, marketing and development costs.
(3) Includes a $[illegible] (after tax) addition to earnings resulting from the retroactive application of a change in accounting from accelerated methods of depreciation to the straight-line method by the

EXHIBIT C-3: General Dynamics - Renegotiation Board data

	SOURCE: RB 67 DATA					SOURCE: SCREENING REPORT			SOURCE: RBI	SOURCE: RBI
YEAR	SALES	PROFIT	% ON SALES	% ON NET WORTH	% ON CAPITAL	SALES	PROFIT OR (LOSS)	% ON SALES	SHIP SALES	SUBMARINE SALES
1951*	$unknown	$unknown	unknown%	unknown%	unknown%	$ 25.7	$ 1.6	6.1%	$unknown	$unknown
1952	"	"	"	"	"	36.1	2.0	5.7	"	"
1953	"	"	"	"	"	50.4	2.7	5.5	"	"
1954	"	"	"	"	"	unknown	unknown	unknown	"	"
1955	"	"	"	"	"	541.4	31.5	5.8	"	"
1956	"	"	"	"	"	unknown	unknown	unknown	"	"
1957	"	"	"	"	"	1,310.7	75.4	5.8	"	"
1958	1,272.4	78.3	6.1	46.7	18.9	unknown	unknown	unknown	"	120.7
1959	1,503.8	83.5	5.6	40.0	13.9	1,502.2	70.9	4.7	"	131.0
1960	1,598.1	92.7	5.8	46.4	14.3	1,608.1	74.1	4.6	"	139.2
1961	1,564.4	64.1	4.1	42.0	11.0	1,548.8	46.1	3.0	"	150.5
1962	1,433.5	75.5	5.3	210.1	20.8	1,405.4	48.6	3.5	"	187.3
1963	1,018.8	59.7	5.9	97.3	20.7	1,005.1	42.8	4.3	"	240.3
1964	1,192.0	61.0	5.1	68.7	19.2	1,186.5	52.9	4.5	356.2	279.4
1965	1,095.9	53.6	4.9	46.5	16.0	1,099.6	62.0	5.6	441.9	"
1966	"	"	"	"	"	1,101.1	59.1	5.4	351.8	"
1967	1,343.1	40.1	3.0	61.3	10.2	1,312.4	8.5	0.6	355.7	"
1968	1,682.9	62.8	3.7	57.6	11.6	1,592.2	(27.8)	unknown	245.9**	"
1969	1,864.4	50.8	2.7	31.0	8.7	1,751.6	(61.9)	"	248.3**	"
1970	unknown	unknown	unknown	unknown	unknown	1,751.8	23.7	1.4	326.5**	"
1971	"	"	"	"	"	1,519.9	26.4	1.7	307.5**	"
1972	"	"	"	"	"	1,886.0	75.4	4.0	273.4**	"
1973	"	"	"	"	"	1,127.6	31.6	2.8	339.2**	"
1974	"	"	"	"	"	1,015.7	(38.5)	unknown	unknown	"
1975	"	"	"	"	"	1,240.5	(37.5)	"	"	"
1976	"	"	"	"	"	unknown	unknown	"	"	"

* Data begins with the Renegotiation Board act of 1951.

** Report includes frigate ships - A-3.

APPENDIX D: THE SHIPBUILDING INDUSTRY IN AMERICA

THE EARLY DAYS

Necessity gave birth to the shipbuilding industry in America. Colonists in the new world found themselves isolated by the failure of the English to maintain regular trans-Atlantic route service. Some colonies fared better than others; those lacking the raw materials that the British desired were often completely bypassed by English ships.[1] As commerce among the colonies themselves grew, so did the need for a local merchange fleet.[2] Until the late nineteenth century, sea transport was cheaper and far more expedient than land transport, particularly in the Americas.

The economic conditions in Massachusetts in the late 1630s provided the first real spur to colonial shipbuilding. Political and religious reform in England produced a precipitous drop in the numbers of new immigrants. Yet, many English ships continued to call at the port of Boston. Their captains expected to find a good market and hard cash for their cargoes. When they found little specie available, they were reluctant to accept either promises or agricultural produce in exchange for goods. Depression threatened as English merchants limited credit and ignored the commodities Massachusetts held for export. Boston merchants were forced to finance the development of domestic shipbuilding in order to establish regular coastal trade. Such trade would, in time, provide a flow of cash and credit.[3]

In January 1640, the Massachusetts government passed a series of laws aiding debtors. These laws required the acceptance of commodities when cash was unavailable. Other legislation was passed promoting the iron and cloth industries, both of which were vital to shipbuilding. In September 1640, Governor John Winthrop advocated the creation of a Massachusetts-built and owned merchant

fleet which would free the colony from its dependence on English shipping.[4]

Pennsylvania, New York and Virginia, soon followed suit. Philadelphia had a particularly active shipbuilding community which had little competition within its region. Nevertheless, close cooperation between Boston's merchants and shipbuilders and a sympathetic colonial legislature allowed Massachusetts to dominate American shipbuilding throughout the colonial era.[5]

The years from 1690 to 1713 saw the greatest spurt in ship construction and repair. War with France depleted the English fleets. Moreover, the British merchant community was expanding beyond the capacity of England's shipyards. Colonial-built vessels were popular with British merchants, and they carried much British owned trans-Atlantic commerce. Although restrictive legislation was passed to control the growth of other American industries, there was no attempt to suppress colonial ship construction. As a result, by mid-century local and inter-colonial shipping was generally built and owned by colonists. On the eve of the Revolution, at least a third of the British fleet was American built. American shipbuilding was a well-established industry.[6]

The Revolution disrupted trade routes and stalled commerce. Nevertheless, shipyards were busy refitting merchant vessels to serve as warships in the Continental Navy and providing repairs to damaged vessels.[7] Letters of marque issued by the Continental Congress authorized the launching of privately owned warships to supplement the tiny Navy. Privateers sailed in refitted merchant ships as well as in ships constructed with venture capital. American owners received two-thirds of any prize money brought by the sale of captured British-owned ships.[8] The New England privateers harassed transports and supply ships and did much damage to British coastal military operations.[9]

With the winning of independence, the United States entered the first phase of national development. American wealth lay in

commerce and shipping. Finished goods and industrial products were imported from Europe, while raw materials and agricultural products were exported.[10] The new government acted quickly to promote a prosperous maritime industry. The first tariff, enacted by the First Congress in 1789, stipulated a 10% reduction in custom duties for imported goods carried in American vessels. This Act also provided a tonnage tax favorable to American shipping. By the end of the eighteenth century, American ships carried most of the country's trade.[11]

The war between France and England however stymied the growth in U.S. trade and commerce. The Embargo Act of 1807 stopped all foreign trade and halted shipbuilding. American goods accumulated on piers and docks. The War of 1812 further damaged the economy of the country. Ships rotted in port, and in protest, the New England states refused to send their quota of troops to the Army or to pay their quota of federal taxes.[12]

Following the war, a sympathetic national administration helped to revitalize the maritime industry. The Navigation Act of 1817 restricted domestic coastal trade to American flag vessels. Shortly thereafter, Federal Maritime Hospitals were established to serve sailors. Though the merchant fleet received little else in the form of government assistance, the maritime industry flourished. Many improvements were made in shipping and navigation. By the 1840s the American-designed clipper ships were known worldwide for their speed. The merchant fleet was second only to England's. Throughout this era of successful expansion, the industry remained strictly private enterprise.[13]

The first federal subsidy payment was made in 1845. That year, Congress authorized the Postmaster General to award mail subsidies, with preference given to steamships which could be converted to vessels of war. Between the years 1847 and 1858, $14.4 million was spent on mail subsidies to help establish regular

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steamship service to the West Coast, Europe, and South America. However, these subsidies were discontinued in 1858 after several subsidized lines encountered financial difficulties, and it was generally agreed that mail subsidies had proven to be both in effective and an unnecessary drain on the budget.[14]

The Decline of the Merchant Fleet

The Civil War marked a turning point for the U.S. merchant fleet. Owners were anxious to protect their vessels from Confederate raiders and to avoid exorbitant insurance rates. Many ships were transferred to neutral flags. Those that were transferred could not be returned to U.S. registry. Many other ships were sunk during the hostilities. By the end of the war, the U.S. foreign trade fleet had fallen from 2.5 million to 1.5 million gross tons.[15]

The development of European steel-hull ships was even more devastating. The advanced technology of Europe gave British and Continental builders a considerable advantage by cutting the cost of building iron vessels. The higher price of domestically-built ships reduced their potential earnings in foreign trade. Investment in American-built trans-oceanic ships was no longer atractive. These problems were further compounded by the fact that the economic development of the United States had entered its second phase. U.S. capital was drawn toward the western frontier and expanding domestic markets. Because there was little need to pursue foreign markets, America's shipbuilding technology fell further and further behind the propeller-driven British steamships.[16]

In 1891, a serious attempt was made to reverse this trend by passage of the Subsidy Act. The objectives of the Subsidy Act were to expand trade and to strengthen national defense by extending mail contracts to high speed ships. The Post Office was

authorized to invite fifty-three proposals for liner service. Unfortunately, the Subsidy Act was singularly ineffective. At no time prior to its expiration in 1923 were more than eight subsidized lines in operation. The American Line was the only new line established under the Act, and it received more than half of the total subsidy payment of $29.6 million[17]

By the turn of the century, the internal development of the country was largely completed. America entered a new phase based upon a balanced, self-sustaining economy. American financiers, with their rapidly expanding industrial plants, began to investigate the unexplored markets of Central and South America, as well as the Far East.[18]

Three events of this period added dramatic impetus to the revival of U.S. maritime interests. During the Spanish-American War, the U.S. Naval detachments in the Philippinies and those blockadinig Cuba were so seriously hampered by a lack of colliers, scouts, and supply vessels that the Navy was forced to purchase and charter foreign vessels. The following year, England withdrew large numbers of British merchant ships from North Atlantic trade to aid in the suppression of the Boers. The impact on U.S. freight rates and services was so severe that it was later claimed that American exporters had financed the Boer War. The deficiencies of the American merchant marine were again underscored in 1908 during the round-the-world cruise of Theodore Roosevelt's Great White Fleet. The fleet lacked the necessary auxiliary ships and was attended, instead, by a motley array of colliers, tankers, and tenders bearing foreign flags. These experiences provided hard, tangible evidence of the need to further develop the U.S. merchant marine. A viable fleet was a necessity if the country was serious about fulfilling its manifest destiny as a great world power.[19]

The principal obstacle to operating U.S. merchant ships in foreign trade was the requirement that they be constructed in

American yards. When first enacted, in 1789, this restriction had provided an effective stimulus to the infant shipbuilding industry. One hundred years later, it was an insurmountable hurdle for U.S. shippers. The higher cost of American steel forced production costs forty percent to seventy percent higher than those of Great Britain or Germany. Further, many believed that U.S. vessels were not efficient on the ocean.[20] This allegation was disputed by U.S. shipbuilders, who claimed that their vessels were indeed "sea worthy." They argued that the use of American built ships was restricted to domestic trade by various market factors, not by deficient ship designs or antiquated, costly production methods. Nevertheless, their public image as producers for a sheltered domestic market hurt them severely. American capital flowed overseas to purchase foreign-built ships for registry under foreign flags.[21] By the beginning of the twentieth century, only one American Trans-Atlantic line was in operation. American ships were carrying less than ten percent of U.S. trade.[22]

Debate raged over the most appropriate action for the federal government to take to resolve these problems. The Democrats howled over the evils of the Republican tariff system. Here, they claimed, was a perfect example of a protective tariff that aided one industry to the detriment of another. Republicans were unwilling to endorse the Democrats' free ship policy. They argued instead for a protective system which would bring steelmakers, shipbuilders, and ship owners under one comprehensive program.[23]

In 1904, Congress created a Merchant Marine Commission to investigate the issues and determine what legislation should be enacted to promote the maritime industry. The Commission's final report was published in 1905, and a bill was submitted to Congress with a recommendation for prompt action. The bill provided for the establishment of national defense, the creation of a force of Naval volunteers, the establishment of U.S. oceanic mail lines, the

promotion of commerce, and the development of new types of vessels. Typically, the Commission members could not agree on either the conclusions drawn in the report or on the report's recommendations. The majority of the Commission favored a subsidy program, while the minority advocated a return to discriminatory duties.[24]

Concurrently, the first proposal for a government-built and owned merchant fleet was heard. The plan called for a government fleet operated in foreign trade by a national commerce commission. Both this proposal and the Commission's bill failed to pass Congress. A modified bill offered in 1906 also failed.[25]

Finally, in 1910, the stalemate was resolved in the form of a rider to the Panama Canal Act. The rider granted shipowners the right to acquire foreign-built ships on a duty-free basis for operation in foreign trade. It also removed duties from all shipbuilding materials used in the construction of U.S. flag vessels. The rider had little impact. A shift to U.S. registry involved some disruption of operations and resulted in slightly higher wage costs. U.S. operators were given no incentive to switch, merely permission to do so.[26]

There were other attempts to assist the floundering maritime industry. The 1913 Underwood Tariff was enacted in an attempt to provide an incentive other than subsidy. Commodity imports arriving in U.S. flag vessels were allowed a five percent tariff reduction. In effect, this reduced inbound freight rates by twenty percent to thirty percent. Four years later, the Supreme Court ruled that the tariff conflicted with U.S. treaty obligations and was therefore null and void. The tariff had no lasting effect on industry growth.[27]

World War I

At the outbreak of World War I, U.S. flag ships were employed almost exclusively in the only market which was reserved to

them-domestic trade. Most trans-oceanic transport was dependent upon British, German, French, and Italian shipping. The withdrawal of the belligerents' ships from U.S. foreign commerce created severe problems requiring prompt federal action.[28]

Two statutes were immediately enacted to encourage U.S. shipowners to take over trade routes from which the belligerent nations were withdrawing. The first authorized the Treasury to write risk insurance on American ships. The second liberalized the terms under which American shipowners might transfer vessels registered abroad to the safety of the American flag. The results were immediate; by September 1914, more than half (over 250,000 tons) of American-owned shipping had been transferred to U.S. registry.[29]

Nevertheless, shipping rates soared. Many felt that further action was required to bring more ships into foreign trade. In the first clearly articulated program of its kind, President Wilson proposed the organization of a government corporation to acquire and operate a fleet of approximately fifty vessels. The proposal passed the House, but was soundly defeated in the Senate which now believed that commercial demand was sufficient to spark the shipping industry. Events soon proved them to be correct. Within two months the shipyards were saturated with private orders.[30]

Many other maritime bills were introduced and defeated until passage of the Shipping Act in 1916. The Shipping Act established a five member Shipping Board as a permanent, independent body with broad promotional, investigatory, regulatory, and administrative powers. The Board was authorized to acquire and to construct vessels and to participate in liner and conference agreements. The Board was also authorized to control the transfer of U.S. vessels to foreign flags.[31]

The Shipping Act was primarily designed to equip a neutral United States to carry on commerce in a war torn world. However, since the Board was not organized until January 1917, there was

no opportunity to test the effectiveness of its programs in meeting commercial needs.[32] When the United States declared war April 6, 1917, it was necessary to rely on foreign vessels to transport men and supplies to the fighting fronts.[33]

Two months passed before a decision was reached to undertake an emergency shipbuilding program. The government was almost totally unprepared for this task. Enactment of the guiding legislation, the Shipping Act of 1918, took several additional months. The 1918 Act slightly modified the 1916 Act. It prohibited the transfer of a U.S. flag ship to foreign registry, the sale or leasing of a shipyard or drydock to a foreigner, and the building of a shipyard by a foreigner.[34]

Under the 1916 Shipping Act, the U.S. embarked upon its largest shipbuilding effort to date. The goal was to construct over 3,000 new vessels. The first step was to establish capable shipyards. The most commonly used method was for the government to pay the cost of constructing facilities erected on land purchased by shipbuilding companies. Virtually all of the new shipyards were built in either the Northeast or the Pacific Northwest. The most famous yards were Bristol, Pennsylvania; Groton, Connecticut; and Newburgh, New York. These yards were essentially horizontal in design and required much water frontage. There was little space at the head of the ways for fabricating shops.[35]

During World War I, shipyards were primarily points of assembly. The ships built were prefabricated in the sense that the steel was cut, bent, drilled, and riveted together in transportable sizes outside the yards. These prefabricated sections were then shipped from the structural steel plants to the yards in freight cars. The Shipping Board speed record was set by the Columbia River Shipbuilding Corporation which delivered an 8,000 ton vessel fifty-two days after laying keel.[36] A total of 2,318 ships were built between 1918 and 1922.[37]

Although these results were remarkable, delivery was too late. Of the more than 3,000 ships authorized for construction, less than one-sixth were completed before Armistice Day, and only a few vessels ever saw wartime service.[38] Enormous resources were expended, and enormous waste was entailed. Too much time was consumed in developing facilities. Additional time was lost through labor slowdowns and strikes. Wages rose 150% from 1915 to 1918. There were one hundred strikes in 1917 alone.[39] By the conclusion of the program in May 1922, $3.3 billion had been spent.[40]

When finally launched, the Shippiing Board's fleet was the largest merchant fleet in the world. However, more than half of the vessels were owned by the government, which had no experience in the management of commercial shipping.[41] Since many of the ships had been designed under emergency conditions, they were not suited to peacetime use.[42]

The authority vested in the Shipping Board to own and operate ships was slated to expire five years after the Armistice. Unfortunately, the legislation gave no guidelines either for the management of a peacetime, publicly-owned fleet or for the transfer of the fleet to the private sector. The Merchant Marine Act of 1920 was passed to remedy these omissions.[43]

The 1920 Act is best known for the statement of purpose in its preface. The Act stipulated that it was the policy of the United States to foster and maintain a merchant marine capable of carrying the greater part of U.S. commerce and of serving as a naval or military auxiliary in time of war or national emergency. The fleet was ultimately to be owned and operated by private citizens. These same principles underlie the merchant marine legislation of today.[44]

The provisions of the Merchant Marine Act directed the Shippiing Board to determine essential trade routes and to sell or charter the vessels to maintain these routes. If no private enterpreneur could be induced to provide a particular service on

acceptable terms, the Board was authorized to operate vessels itself until satisfactory sale terms could be negotiated.[45] In addition, the Act provided for a construction loan fund, a tax exemption on earnings deposited in special trust funds for the building of new vessels, and for the transport of mail by U.S. flag vessels. Finally, the Act reaffirmed the policy of reserving domestic trade to ships built and manned by Americans.[46]

The shipping boom collapsed almost immediately after the Merchant Marine Act was passed. Seventeen percent of the world's fleet was idled. The government's plans for ship sales were shattered. Vessels built for $200 to $250 a ton were offered for only $30 a ton. Even at this price, the Shipping Board received few bids. A deficit of $52 million was recorded by the Board in 1922, $53 million in 1923, and $16 million in 1924. There was great pressure on the government to transfer the shipping lines to private owners regardless of the terms.[47]

Few private owners were in a position, however, to assume responsibility for operating shipping lines. Few had any practical experience beyond that of acting as a manager for government-owned lines. Nevertheless, the Act favored established operators and thereby tended to cut out other private entrepreneurs who often had more capital. This practice merely served to undermine the competitive bidding process. Finally, there was no effective mechanism for assuring the long-term success of private operators who acquired government lines.[48] The provisions of the Act simply allowed for the sale of ships at low cost to an experienced operator who was, in turn, bound to provide service over a designated route. As time passed, American ships were increasingly outperformed by more modern foreign-built ships.[49]

Recognizing the vulnerability of the U.S. shipping industry, Congress passed the Merchant Marine Act of 1928. Although this Act permitted the continuation of government ownership and operation, it was primarily intended to shore up private industry.

The 1928 Act authorized an indirect subsidy to U.S. shippers in the form of mail contracts. Unfortunately, there were no useful standards for determining the proper amount for individual contracts. Although the Act called for competitive bidding, its provisions favored a few established firms. Soon after passage of this Act, the shipping industry was once again in difficulty.[50]

In 1930, President Hoover appointed a commission to review the existing merchant marine legislation and the procedures of the Shipping Board. The commission recommended against the sale of the American Diamond Lines and the American France Lines to the United States Lines. It opposed the principle of consolidating small concerns into one large company. It favored, instead, the Shipping Board's policy of creating and supporting new shipping concerns as the best means of promoting a sound merchant marine.[51]

Despite these efforts, the U.S. merchant fleet's share of foreign trade continued to decline. As a result of the building program for World War I, the share of U.S. foreign trade carried in U.S. vessels rose from a low of 9.3 percent in 1904 to a high of 51.3 percent in 1921. But by 1931, only 37 percent of the water-borne foreign commerce of the U.S. was transported in U.S. vessels.

The New Deal in Merchant Shipping

By 1930, maritime subsidies had been a target of both congressional and public criticism for over fifty years. The Shipping Board's practice of awarding mail contracts at the maximum rates authorized by the Merchant Marine Act of 1928 heightened the ire of critics. With the onset of the Depression, the criticism became even more pronounced.[52]

In response, Congress undertook substantive modification of the 1928 program. In 1932 the Shipping Board was reduced to three

members. In 1933, the Board was stripped of its independent status and placed under the jurisdiction of the Department of Commerce. A rider was also appended to the 1933 Independent Office Appropriations Act authorizing the President to modify or cancel any mail contract which he found to be contrary to the public interest. Concurrently, a congressional subcommittee was formed to investigate mail contracts; the Department of Commerce organized a study of the maritime industry; and the Post Office Department initiated an investigation aimed at identifying mail contracts that could be cancelled.[53]

The findings of these three investigatory groups were made public early in 1935 and revealed a pattern of opportunism, shoddy performance, and irresponsibility. The congressional subcommittee's report called for the repeal of the 1928 Act and the cancellation of any further aid to shipping. The Postmaster General's report recommended tightening up the administration of existing laws. The Department of Commerce's paper stressed the importance of a merchant marine to the United States and highlighted the need for financial assistance to private firms. The Commerce report also stipulated that payments should not exceed the cost differentials between U.S. and foreign operations and that strict supervision of payments should be assured.[54]

President Roosevelt forwarded the Post Office and Commerce reports to Congress with a request for legislation authorizing a new, direct subsidy program. His request included the following specifications for the new legislation. The subsidy program should compensate for the difference between U.S. and foreign construction and operating costs, as well as take into account the liberal subsidies other nations provided their shipping industries. It should ensure adequate supervision of payments and exclude direct aids, such as government loans for construction. Roosevelt also asked that the Shipping Board be reorganized to separate administrative

from quasi-judicial functions. The President also asked for the rapid termination of all ocean mail contracts. Unfortunately, the President did not stipulate how a government-assisted maritime industry should be owned and operated, nor did he specify the size and type of merchant fleet desired. These dilemmas were left for Congress to resolve.[55]

Congress became embroiled in a debate which continued for fifteen months. A total of thirty-five different subsidy bills were drafted. The central issue was government versus private ownership. A collateral issue was the extent to which the government should intervene in the management of private industry in order to secure public objectives and protect public investment. Very little attention was given to formulating the objectives of the program; instead, the debate focused on alternative strategies for maintaining an efficient foreign trade fleet under the American flag. Even the public hearings on the proposed bill failed to generate any testimony on how the new law might be structured to assure maximum benefits for either the shippers or the defense establishment. In fact, no testimony was received from any representative of the military services.[56]

Further, there was no agreement among administration officials on the quantitative objectives for development of the U.S. flag fleet. Colonel James Johnson, Assistant Secretary of Commerce, recommended that a fleet capable of carrying 75 percent of U.S. commerce be established. A. H. Haag, Chief of the Research Division of the Shipping Board Bureau, urged that the fleet not be expanded, but that provisions be made for replacement of obsolete vessels. Given this lack of consensus, the congressional sponsors of the bill refused to designate the size of the projected fleet or even to estimate the total cost of the program.[57]

Finally, in late March of 1936, the Senate Commerce Committee reported a compromise bill without recommendations. Agreement with

subsidy opponents was only reached after the Senate Appropriations Committee threatened to withhold funds for mail contract payments. The bill was ratified June 19, 1936.[58]

The Merchant Marine Act of 1936 established the Maritime Commission as the successor of the Shipping Board. The Commission was expected to modernize the American merchant marine through the judicious distribution of subsidies to a limited number of American shipping companies. Subsidies were limited to compensation for the different costs of constructing, employing, or purchasing an American flag vessel. Subsidized lines were also required to have a plan for the replacement of old vessels. Annual deposits equal to the depreciation on subsidized vessels were to be placed in an untaxed capital reserve fund. Earnings in excess of ten percent were to be deposited in a special reserve fund to be held until the government had recaptured any outstanding construction loans.[59]

The Maritime Commission was also authorized to build vessels and to charter them to commercial lines for operation over essential trade routes. The Commission was also empowered to operate training schools for merchant seamen and officers. Thus, the 1936 Act provided government support for constructing, equipping, and manning the U.S. merchant fleet.[60]

Like all other pre-World War II maritime policies, the 1936 Act remained ambiguous on the subject of defense needs. The dual function of the merchant marine as a commercial venture and as an instrument of national policy in times of peace and war was widely recognized. Yet, no legislation or debate on merchant shipping indicated that these two functions were potentially incompatible or that more ships might be needed for national security than could feasibly be maintained in commercial operation. The basic commercial orientation of all maritime legislation enacted from 1920 to 1938 was simply accepted as an inevitable and satisfactory compromise for both economic and defense purposes.[61]

Nevertheless, the 1936 Act did however give the Navy an important voice in formulating Commission policies because of the poossible use of the vessels by the Navy in time of war. The Act thus required that the Commission submit contracts and specifications for new vessels to the Navy for approval. This procedure allowed the Navy to propose any changes deemed necessary to assure the speedy and economical conversion of merchant ships into naval auxiliaries. The Commission ultimately assumed the cost of all national defense features added to subsidized ships.[62]

The number of ships constructed prior to World War II under the auspices of the Maritime Commission was small in comparison with the number constructed during the war. Nevertheless, the building that did take place was extremely important preparation for the work done from 1941 to 1945. A foundation was laid through the founding and expansion of shipyards, the development of new ship designs, and the training of personnel.[63]

The modernization of the merchant fleet was not an easy task to undertake. By 1942, 91.8 percent of the 1,422 ocean going vessels registered under the American flag would be twenty years old. All of the 225 government-owned ships would be twenty years old, and most of these had been in moth balls since World War I. Although twenty-nine large combination passenger-cargo vessels had been built under the 1928 Act, the most glaring deficiency in the U.S. fleet was the shortage of dry-cargo vessels. Most of the existing dry-cargo vessels were obsolete and capable of only 10- to 11-knots. Although the need for more freighters was obvious, there was no consensus among the Navy, the Commissioners, and the prospective operators on the type of freighters to build. The conflict arose from divergent goals: the Navy needed fast ships; the shipping companies were interested in economy of operations.

The Navy also wanted speedy tankers that could be used as auxiliaries. Subsidies aimed at increasing the speed of tankers to

18 knots were among the first granted by the Maritime Commission. Although this extra speed was coveted as a "defense feature," the U.S. tanker fleet had been well maintained by the American oil companies and was not nearly as deficient as the dry-cargo fleet.[64]

Fortunately, under the direction of Admiral Land, Chairman of the Maritime Commission, the debates about ship design were largely resolved prior to the onset of World War II. Merchant shipbuilding was booming as the war drew near, and the revival of the industry was taking place under the guidance of the Commission. The Commission's long-range program for replacement of obsolete vessels called for the construction of fifty ships a year for ten years.[65]

When the war began in Europe, the demand for shipping increased. A more favorable market for merchant ships, coupled with a more urgent potential need for naval auxiliaries fostered an acceleration of the Commission's long-range program. The goal of this first wave of expansion was to issue contracts for two hundred ships prior to July 1941. Contract appropriations were raised by $57 million by the Second Deficiency Appropriations Act of 1940. Before the end of 1940, forty-seven ships had been delivered, and contracts had been awarded for one hundred and thirty more. The new long-range program was well ahead of schedule.[66]

The prewar freighters and tankers designed for the long-range program became the prototypes for the wartime construction carried out under the auspices of the Commission. These ships were commonly referred to as standard types, and they were remarkable for their speed, economy, and improved crew accommodations.[67]

The methods used in constructing these vessels anticipated wartime techniques. The use of welding on large merchant ships was relatively new. However, in all Commission designs, riveting was replaced by welding to such an extent that the weight of the hulls was substantially reduced. Lighter hulls had the advantage

of securing a greater deadweight carrying capacity. In 1940, Ingalls produced the first all-welded ship built under the Commission's program.[68]

The Commission's policy of constructing standard types of vessels was coupled with an effort to apply mass production methods. Traditionally, the individual operator determined the design of each ship based upon his assessment of the special requirements of the ports and routes in which the ship would be operating. In contrast, the Maritime Commission's designs were products of consultation with many operating companies and trade associations. Opinions and suggestions were compromised and combined to achieve a standard design adaptable to a variety of needs. The aim was to reduce overhead and building costs by obviating the need for every shipyard to have all of the equipment necessary to fabricate diverse ship components.[69]

To encourage the development of cost-effective shipyards, the Commission awarded contracts for groups of six identical ships. This practice simplified the preparation of working plans, ordering of materials, and control fo construction in the yard.[70] During World War I, ship components were prefabricated in structural steel plants outside the yards and shipped to the yards by rail. The new policies of the Commission allowed shipyards to establish their own fabrication plants behind the ways. Further, an increase in the lift capacity of cranes permitted the preassembly of more, and heavier components. The improvements in prefabrication techniques were largely responsible for the great speed of production that was achieved during World War II.[71]

The shipyards in operation by the end of 1940 were as valuable to the nation as the ships that had been constructed under the Maritime Commission's program. The intricate nature of naval architecture had made the post- World War I industry slump particularly dangerous. If the industry was to survive and retain a potential for sudden growth to meet a new emergency, it was necessary

to keep the highly trained naval engineers and shipyard managers employed.

During the lean years from 1922 to 1938, only the strongest shipbuilding companies were able to stay afloat. They became known as the Big Five:

Newport News, Federal, New York, Sun, and Bethlehem. Because of their superior equipment, the high reputation of their engineers, the location of their yards, and their corporate banking affiliations, they were able to secure the few orders for tankers, ore carriers, and Navy vessels offered during this barren period. In addition to the Big Five, two other shipbuilding companies of primary importance to the Navy were able to remain active during the depths of the shipbuilders' depression. The Electric Boat Company built Navy submarines, and the Bath Iron Works built Navy destroyers. When the new national emergency came, these seven companies were better able to initiate large building programs because previous orders from the Commission and the Navy had provided them with the necessary facilities and equipment.[73]

The Commission also encouraged new companies to enter the field. In December 1940, Admiral Land boasted that seven new shipyards had been developed by the Maritime Commission. Three of the new yards were on the Gulf Coast, and four were on the West Coast. The Big Five, with the exception of Bethlehem at San Francisco, were all located in the northeast. The new geographic distribution was desirable both from the standpoint of national defense and of labor supply.

Neither the Big Five nor the new yards had any idle ways in the fall of 1940. Facilities not used by the Commission for its long-range program were filled by the Navy's shipbuilding program. After years in which little new construction was authorized, a substantial amount of Navy building had been approved in 1934. Then, in 1938, the Twenty-Percent Expansion Act was passed, and

in June 1940, the Eleven-Percent Expansion Act was passed. The amount of new naval construction authorized seemed adequate until France fell and Germany controlled all of the European coast from the Arctic to Portugal. In an immediate reaction, the Seventy-Percent Expansion Act was passed in July 1940, increasing the authorized tonnage of the Navy from 1.7 million to 3.1 million tons. As a result, the Navy's program began to crowd out the building of merchang ships, especially in the years of the Big Five, which were better equipped and had more trained personnel.[74]

This early competition for facilities between the Maritime Commission and the Navy was to characterize their relations during the entire war period. Various bottlenecks were encountered. At times there was a shortage of qualified labor and management personnel; at other times, there was a shortage of machinery. Most frequently, it was the lack of steel plates which held up production. Navy yards and Navy contracts in private yards provided the Maritime Commission's main competition for essential resources.[75]

There were four major waves of expansion of shipyard facilities under the auspices of the Commission during World War II. Typically, these expansions were carried out through the Big Five and the seven new companies founded in 1940. Existing yards were improved and extended, and new yards were constructed under the management of these twelve companies. Kaiser was the only major World War II builder that had not entered into production by 1940.[76]

In 1944 and 1945, the shipbuilding industry was subjected to a new strain Multiple production of standard types was replaced by a demand for the construction of a variety of types of greater complexity. These ships required more labor per ton delivered, and the lack of skilled labor became a factor limiting production.[77] It is questionable whether the shipbuilding industry would have fared so well if more complex ships had been demanded from the onset of the war.

Nevertheless, as a result of the impressive wartime shipbuilding program, the size of the U.S. merchant flert quadrupled between 1941 and 1945. At peak production, the U.S. yards were operating at a rate which would have reproduced the entire prewar tonnage of U.S. merchant ships in just sixteen weeks. In all, 5,777 ships were built.[78]

The war radically changed the structure, composition, and financial status of the U.S. maritime industry. Coastal and intercoastal dry-cargo operations were drastically reduced. In contrast, three times more U.S. shipping companies were engaged in overseas operations in 1946 than in 1939. At the end of the war, these companies had sufficient liquid capital to take advantage of the government's surplus ship sale and purchased seven million deadweight tons of shipping. Labor also benefited. Seamen's wages doubled during the war, and the seafarer's unions emerged with sizable financial reserves. The period that immediately followed the war is still remembered as the heyday of the American maritime industry. The war had destroyed the fleets of the Axis and drastically reduced the fleets of the Allies. Consequently, the U.S. fleet carried a large portion of the world's commerce and a much larger portion of U.S. exports and imports than it had carried since the earliest years of the Republic.[79]

The early postwar reconstruction programs continued government involvement in merchant shipping. For several years after the war, a large percentage of American exports were shipped under government sponsorship. The government was also a major exporter of ships. Ships not purchased by United States citizens were offered to foreign nationals. Unsold ships were laid up in re-

serve fleets at eight sites throughout the country. Although the military had previously operated only a small number of transport vessels, they now retained a significant number of ships to resupply overseas bases and to provide a nucleus fleet in the event of a future war.[80]

Finally, World War II had a significant impact on national attitudes toward the maritime industry. The war demonstrated once again how acutely the nation's security depended upon its shipping. The wartime experience was reinforced by America's new worldwide responsibilities. Official interest in U.S. merchant shipping shifted away from its commercial value and toward an intense concern about the adequacy of the U.S. fleet for meeting defense requirements. Unfortunately, this new orientation was not accompanied by a major restructuring of the nation's maritime programs.[81]

POST WORLD WAR II

At the end of World War II, the U.S. flag fleet consisted of approximately 4,5000 vessels suitable for commercial use. These ships were operated by some 130 private companies which had the experience, the funds, and, in most cases, the desire to continue in commercial operation. However, their future depended upon a market for their services.[82]

Even before the war ended, the United States had concluded that postwar reconstruction could best be accomplished by enabling allies to rebuild their economies by participating fully in a system of international exchange. In keeping with this general policy, over one thousand ships (out of a total of four thousand plus) were sold to foreign nationals between 1946 and 1948. U.S. firms were thus prevented from dominating international shipping.[83]

By the late 1940's, foreign shipyards were once again producing vessels. In 1951, the foreign flag fleet showed the results of a revitalized shipbuilding industry. By 1958, the U.S. merchant fleet had fewer ships than it had in 1939. In the years that followed, there was no apparent incentive for the development of an economically or numerically superior fleet.

Indeed, there were discernible differences in U.S. and foreign investment patterns. The U.S. flag companies received the cream of the war surplus ships in 1946 and 1947 and did not begin to invest in new equipment until 1958. Rather, the U.S. companies deposited capital in construction funds in anticipation of replacement shipping needs. Foreign shipping firms drove capital resources directly back into business by introducing new vessels as rapidly as their finances and trade permitted. As a result, the average cost of foreign vessels was higher but the new vessels could be operated at less expense. Furthermore, these vessels were obtained at a lower price than the U.S. firms were likely to have to pay in the future. The U.S. fleet moved toward obsolescence.[84]

Throughout this period, the character of U.S. merchant shipping continued to change. During the 1940's, domestic shipping interests declined. Climbing port and longshore charges reduced the economic margins which the water-borne carriers had previously enjoyed. By 1950, only one hundred and fifty privately owned dry-cargo and passenger vessels were in domestic service compared to the four hundred and forty in domestic service before the war. The decrease in domestic shipping enormously increased the economic importance of U.S. overseas maritime operations.[85]

U.S. foreign trade volume was erratic after World War II, although there was an overall rising trend that exceeded even optimistic predictions. Trade was stimulated, in many instances,

by a series of unanticipated crises including the Korean conflict, the closing of the Suez Canal, and the Vietnam conflict. Each crisis was followed by a dip in the volume of trade and a subsequent decrease in the demand for ships.[86]

Moreover, each postwar decade brought with it some attempt to restructure the government's maritime programs. In 1950, the Maritime Commission was abolished through a presidential reorganization plan. Two new agencies were established in its place. The Maritime Administration, which was placed under the jurisdiction the Department of Commerce, was to administer the various merchant marine programs. The Federal Maritime Board was assigned the regulatory and subsidy determination functions of the former Commission. However, the mingling of regulatory and promotional functions in the Maritime Board was found to be unsatisfactory. In 1961, another presidential reorganization plan abolished the Board, allocated the function of determining subsidies to the Maritime Commission to regulate the industry.[87] Unfortunately, these maneuvers did little to improve the economic status of the U.S. merchant fleet.

The commercial viability of the U.S. fleet was intimately tied to the changing world market conditions of the postwar decades. An examination of the composition of maritime trade during this period indicates that growth was concentrated in certain sectors - irregular and bulk cargo movements. The authors of the 1936 Act had not anticipated this development. In fact, the significance of this phenomena was not immediately recognized while it was occurring. In 1966, a well known analyst of the shipping industry, Samuel Lawrence, wrote that the loss of liner trade tonnage to bulk carriers and tramps should be viewed as a short-term effect - a response to the crisis of the moment.[88] Since the long-range nature of the growth trends was not recognized, there were no attempts to modify U.S. policy.

By 1970, the U.S. merchant fleet ranked fifth, sixth, or seventh in the world depending upon the measurement used. The economic dilemma of the U.S. fleet was manifested in low returns on industry investment and a declining share of the world market. Although U.S. foreign trade more than doubled within ten years, rising from 75 million tons in 1958 to 180 million tons in 1967, the U.S. flag share of this market dropped from twenty-five (25%) percent to eight (8) percent. Clearly, maritime policy needed to be examined once again.

The 1970 Merchant Marine Act sought to rectify the deteriorating situation by calling for the construction of three hundred ships over a ten year period. However, by 1976, only sixty-two contracts for ships with an aggregate contract value of $3 billion had been placed with U.S. shipbuilders.

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APPENDIX E: FEDERAL TAX LAW AND FOREIGN SHIPPING INCOME

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FEDERAL TAX LAW AND FOREIGN SHIPPING INCOME

INTRODUCTION

The impact of the Federal tax law on the shipping operations of foreign corporations controlled by U.S. parent corporations stems primarily from special tax treatments of their foreign shipping income in particular and foreign business income in general. These special treatments as stipulated in respective statutory provisions confer a privilege of not paying current U.S. taxes on undistributed foreign earnings and profits of the controlled foreign corporations and postponing the tax liabilities on the foreign-source incomes to the year in which they are actually remitted to the U.S. corporate or individual shareholders as dividends.* The privilege is commonly referred to as tax deferral. Deferral of tax is like an interest-free loan of case from the government. If deferral is continued over a sufficiently long period of time, it is tantamount to examption from tax.** As a result, tax deferral creates not only current tax savings but also

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* In contrast, under present law the United States imposes its income tax upon the worldwide income of any domestic corporation, whether the income is derived from sources within or without the United States, and whether the income is distributed as dividends to shareholders or not.

** "Where it is not anticipated that the income will be brought back to the U.S., for financial accounting purposes (in accounting for income of a consolidated group consisting of one or more domestic corporations and its foreign subsidiaries) this income in effect is often shown as income exempt from U.S. Tax." U.S. Senate, Finance Committee Report on the Tax Reform Act of 1976, p. 224.

financial capabilities and incentives for reinvestments of the untaxed earnings abroad, particularly in the areas of business operations for which the privilege of tax deferral has been affirmed by statutes. Foreign shipping operation is one of the most favored areas.

In the Federal tax law* there are three important provisions governing tax deferrability on shipping incomes of U.S. controlled foreign corporations per se or their uses as essential conditions for other tax deferral devices. These provisions were first specified by the Revenue Act of 1962, creating liberal tax benefits, and were then modified and restricted by subsequent laws enacted by Congress, especially the Tax Reduction Act of 1975 and the Tax Reform Act of 1976. It should be noted that these provisions refer to the "taxhaven" type of controlled foreign corporation.** This report will examine the provisions and the changes in them one by one. Moreover, there is another provision in the Federal tax law, which exempts the incomes of foreign shipping corporations not controlled by U.S. interests from U.S. income taxation. Since the United States is an important trading partner in world trade, such exemption undoubtedly has provided a strong stimulus for expansion of operations by foreign shipping companies in the past.

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* Generally referred as the Internal Revenue Code of 1954, i.e., the Revenue Act of 1954 as amended by the Revenue Act of 1962, Tax Reform Act of 1969, Tax Reduction of 1975 Tax Adjustment Act of 1975 and Tax Reform Act of 1976.

** Tax-haven activities are generally those in which a base company syphons income from a related company into a jurisdiction which imposes little or no tax on that income.

BACKGROUND

Before each of the specific provisions concerning foreign shipping income is discussed, perhaps a background sketch on the complicated subject of taxation of foreign business income is in order. It is believed that against this general background the favored status of foreign shipping income will emerge clearly.

Prior to 1962, the foreign-source income earned by foreign subsidiaries of U.S. corporations was subject to U.S. income tax only when it was "repatriated" through the payment of dividends to the parent corporations. Tax deferral on the undistributed portion of such foreign-source income was allowed without any qualification. To avoid double taxation, the parent was allowed a credit against the U.S. tax for any tax paid on the dividends to a foreign government. Income of foreign branches was (and still is) included in the taxable income of the parent, but credit was also allowed for any foreign tax paid on this income.

The deferment of tax on income of foreign subsidiaries was at one time considered to be a desirable feature of the tax system because it encouraged foreign investment by U.S...firms. Attitudes toward this policy changed in the 1950's and early 1960's as a result of two developments. First, the United States encountered a serious balance of payment problem, which was aggravated by private capital outflows. Second, the deferral privilege was widely used as a method of tax avoidance. This was done by establishing "tax-haven" subsidiaries in a country with little or no tax on foreign income and using these subsidiaries as base companies were making ample use of them. As a result, a number of American-owned companies were organized technically as foreign shipping corporations with vessels registered under the "flag of convenience".

To deal with both problems mentioned above, President Kennedy in 1961 recommended the elimination of tax deferral on earnings

of U.S.-owned foreign subsidiaries, except for those in underdeveloped countries. However, the business community launched a successful campaign to convince Congress that complete elimination of deferral was too extreme. Congress agreed, but was annoyed by the factual evidence that some foreign subsidiaries were able to avoid paying taxes in any country through the use of tax havens. In the end, the Revenue Act of 1962 contained new methods of dealing specifically with tax havens for business operations in developed countries, but left the basic deferral provisions unchanged. It singled out certain tax avoidance transactions of tax-haven corporations for inclusion in the taxable income of the parent corporation in the year in which income was earned. The technique used was to add the so called subpart F provisions to the Internal Revenue Code of 1954. Under these provisions income from so-called tax-haven activities conducted by foreign corporations controlled* by U.S. shareholders** is deemed to be distributed to the U.S. shareholders and currently taxed to them before they actually receive the income in the form of a dividend. Subpart F of the Code treats as a constructive distribution subject to current tax the undistributed income from tax-haven activities conducted by a controlled foreign corporation. Major exclusions or exceptions to the coverage of subpart F income were also stipulated in the Revenue Act of 1962, which defined in an indirect way as to what constitute non-tax-haven activities. These exceptions permit the continuation of tax deferral on several types of business income earned by controlled foreign corporations. Foreign shipping income is one of the favored types, and the statutory treatments concerning its favored status are given below.

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* A controlled foreign corporation is one in which more than 50% of the voting interest is owned by U.S. shareholders on any day in the corporate tax year. (Code Sec. 957)

** A U.S. shareholder is a U.S. person, corporate or individual, who owns 10% or more of a foreign corporation's voting interest. (Code Sec. 951).

SPECIFIC PROVISIONS CONCERNING FOREIGN SHIPPING INCOME

1. Exemption from current income taxation

Up to the end of 1975, Section 954(b) of the Internal Revenue Code provided: "Exclusion of Certain Shipping Income-- For purposes of subsection (a) foreign base company income* does not include income derived from, or in connection with, the use (or hiring or leasing for use) of any aircraft or vessel in foreign commerce, or the performance of services related to the use of any such aircraft or vessel."**

By virtue of the preceding provision, Congress formally reaffirmed the tax deferral privilege on undistributed foreign shipping income of controlled foreign corporations. Consequently, in spite of the overall objective of eliminating well-known tax avoidance schemes, the Revenue Act of 1962 did not slow down but encouraged continuous expansion of shipping operations of American subsidiaries. It made foreign shipping operations more attractive in comparison with other foreign business activities as far as unchallenged tax deferrability was concerned. This tax deferral privilege remained unqualified and intact until 1976.

The Tax Reduction Act of 1975, however, modifies the provision cited above by changing the title of the subsection to "Exclusion for Reinvested Shipping Income" and limiting the amount of exclusion "to the extent that the amount of such income does not exceed the increase for the taxable year in qualified investments in foreign base company shipping operations of the controlled foreign corporation"*** The term "qualified investments in foreign base

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* A major component of the so-called subpart F income, which includes foreign personal holding company income, foreign base company sales income and foreign base company services income. (Code Sec. 954.)

** Commerce Clearing House, Internal Revenue Code, 1972 edition.

*** Commerce Clearing House, Internal Revenue Code, 1977 edition, Sect. 954.

company shipping operations" means investments in any aircraft or vessel used in foreign commerce, and other assets which are used in connection with the performance of services directly related to the use of such aircraft or vessel. As a result, there will no longer be deferment of taxation on shipping income received by controlled foreign corporations of the tax-haven type unless the undistributed profits are earnings are reinvested in assets for shipping operations.

This new restriction of tax deferral privilege as imposed by the 1975 Act may be viewed as a disincentive for expansion of foreign shipping operations by American subsidiaries over the long term as compared with the tax environment existed in the past. In the short run, however, it may even tend to stimulate current reinvestment of undistributed earnings in shipping operations, because otherwise the parent corporation would incur an immediate tax liability of those earnings in the current tax year.

In addition, the Tax Reform Act of 1976 adds another provision to the Code as follows: "Income of a corporation which is foreign base company shipping income.....chall be excluded from foreign company base income if derived by a controlled foreign corporation from, or in connection with, the use (or hiring or leasing for use of an aircraft or vessel in foreign commerce between two points within the foreign country in which such corporation is created or organized and such aircraft or vessel is registered."* Since shipping operations conducted by a controlled foreign corporation within a country of its vessel

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* Commerce Clearing House, International Revenue Code, 1977 ed. Sec. 954 (b).

registration are generally limited in scope and constitute only a small fraction of its worldwide operations, this new exclusion privilege is not regarded as a significant tax deferral advantage.*

2. As a qualifying condition to obtain overall tax deferral privilege.

Under the Federal tax law, a U.S. parent corporation not only derives tax deferral benefits on its controlled foreign corporation's shipping income as explained above, but is also in a position to use such shipping income to shelter other undistributed earnings of its foreign subsidiaries from current taxation if a certain condition is met. This condition was formerly known as the "70-30" provision, whereby if 70 percent of a controlled foreign corporation's gross income could be classified as "excluded" subpart F income, that qualification automatically excluded the other 30 percent** Such a corporation would arrange to acquire and operate ships which, by nature of shipping operations, generate a sufficient amount of gross income to establish the requisite 70 percent for tax deferral of its other undistributed foreign business incomes and earnings. The Internal Revenue Service has restated the special rule by issuing a Revenue Ruling as follows: "Shipping income excludible from foreign base company income under

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* The Senate staff estimated that this feature would provide about $4 million current tax savings to the American parent corporations. (U.S. Senate, Finance Committee Report on the Tax Reform Act of 1976.)

** Commerce Clearing House, Internal Revenue Code, 1972 edition, Sec. 954 (b)(3); "(A) If the foreign base company income (determined without regard to paragraphs (1) and (5) is less than 30 percent of gross income, no part of gross income of the taxable year shall be treated as foreign base company income."

section 954 (b)(2) of the code is includible in gross income in applying the percentage tests of section 954 (b)(3); gross income from shipping includes gross receipts without reduction for costs and expenses attributable thereto....."*

The Tax Reduction Act of 1975 amended Code section 954 (b)(3) on percentage tests mentioned above, by substituting a figure of "10 percent" for the original "30 percent".** Thus, now it takes an exempt shipping gross income amounting to 90 percent of a controlled foreign corporation's total gross income to secure tax deferral on the remaining 10 percent. Coupled with the tightening of statutory definition of exempt foreign shipping income to the extent of reinvestment, now the opportunity for using foreign shipping income as a qualifying condition to shelter other undistributed foreign business incomes from current taxation is obviously more limited than before.

3. As a qualifying conditions for tax-favored less developed country corporation.

Since World War II, it has been a basic objective of U.S. national policy to encourage economic development in foreign countries, as evidenced by our extensive foreign-aid programs. Private investment abroad may to some extent take the place of direct outlays of public funds. Consequently, statutes have been enacted to provide incentive for foreign investments. With economic recovery in Western Europe and other industrial areas of the world, focus of the economic development policy has been shifted

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* Internal Revenue Service, Revenue Ruling 71-369.
** Commerce Clearing House, Internal Revenue Code, 1977, edition, Sec. 954 (b)(3)(A).

to concentrate on the so-called "less developed countires" (LCD). For purposes of the Federal tax law, a LCD is any foreign country (other than twenty-one developed countries enumerated by Congress and an area within the Sino-Soviet bloc) or any possession of the United States designated by a Presidential Executive Order at the beginning of a taxable year.*

A parent corporation of a LDG corporation was granted the privilege of tax deferral on its earnings and the privilege of applying low-tax capital gain treatment on all previously untaxed gains and profits realized on sales of LDC investments if the investments were held for ten years or more.** Normally, for a U.S. controlled foreign corporation to qualify as LCD corporation it would have to establish a business within a LCD, and at least 30 percent of the corporation's assets and activities as evidenced by gross income would have to be placed and occur within that LCD. But, in the case of a shipping firm, the company's only presence in a LCD (e.g. Panama or Liberia) may be just the registration papers of its vessels. Its worldwide shipping income and assets could be used to meet the 80 percent requirement of a LCD corporation for tax saving purposes. Before 1976, the Code provided: "For purposes of this subpart, the term "less developed country corporation" also means a foreign corporation--
(A) 80 percent or more of the gross income of which for the taxable year consists of--
(i) gross income derived from, or in connection with, the using (or hiring or leasing for leasing for use) in foreign commerce of aircraft or vessels registered under the laws of a less developed

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* Internal Revenue Code, 1972 edition, Sec. 955 (c)(3).
** Internal Revenue Code, 1972 edition, Sec. 955

country, or from, or in connection with, the performance of services directly related to use of such aircraft or vessels, or from the sale or exchange of such aircraft or vessels, and..."*

The Tax Reduction of 1975, however, has removed most of the tax advantages previously conferred on LCD corporations, thus ending period of establishing shipping companies under the guise of LDC corporations for tax purposes.

4. Exemption of shipping earnings of foreign corporations from U.S. income taxation.

The Federal tax law exempts shipping income of foreign corporations which are not controlled by U.S. interests, entirely from U.S. income taxation as indicated by the following statutory provision:

"The following items shall not be included in gross income of a foreign corporation, and shall be exempt from taxation under this subtitle: (1) Ships under foreign flags--Earnings derived from the operations of a ship or ships documented under the laws of a foreign country which grants an equivalent exemption to citizens of the United States and to corporations organized in the United States."**

Normally, when other kinds of foreign corporations (e.g. banks and insurance companies) do part of their business in the United States, they must pay U.S. taxes on that part of their profits. Yet foreign shipping companies, which in the course of shipping operations put their vessels in American ports, are exempted from the general rule. Owing to the enormous volumes of U.S. foreign trade, such an exemption has undoubtedly provided a strong impetus

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* Commerce Clearing House, Internal Revenue Code, 1972 edition, Sec. 955 (c)(2).

** Internal Revenue Code, Sec. 883.

for development and expansion of foreign shipping companies since World War II.* The growth of foreign shipping, in turn, has generated strong demands for ship-building activities in foreign shipyards in the postwar period.

OTHER TAX DEFERRAL OPPORTUNITIES

Up to 1976, with or without benefits relating to excluded shipping income, a controlled foreign corporation's undistributed earnings and profits would not be taxed to its U.S. corporate shareholders if certain minimum distribution of earnings and profits were made by the controlled foreign corporations. These minimum distribution requirements varied, depending upon the foreign tax rate applicable to the controlled foreign corporation.** In general, if the effective rate of taxes paid to foreign countries were high, little or a low percentage distribution of earnings and profits would be required for retaining the tax deferral privilege on the undistributed portion of profits, and vice versa.*** It appears that applying the "minimum distribution" exception as an escape hatch was vastly easier for the giant multinational corporations, having operations in both high-tax and low-tax countries, than it was for the so-called "tax-haven" corporations, relying on the low-tax characteristics of their case countries. Making use of the "minimum distribution" exception, the large multinational corporations, particularly the oil companies, were able to retain large untaxed, undistributed profits for reinvestments abroad, including those in shipping needs own their own fleets, carrying the "flags of convenience" of Panama or Liberia.

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* "Description of Shipping Billionaires", Forbes, Aug. 1, 1970 pp. 20-23

** Internal Revenue Code, 1972 edition, Sec. 963.

*** Internal Revenue Code, 1972 edition, Sec. 963.

The Tax Reduction of 1975 closed the "minimum distribution" escape hatch. Technically, it repealed and deleted Section 963 among the subpart F income rules from the Internal Revenue Code.

Finally, there is a provision in the Federal tax law that permits administrative determination of tax deferral status of foreign base company income. Under this provision, if it is established to the satisfaction of the Secretary of Treasury or his delegate that the controlled foreign corporation, or the transaction through which foreign income is derived, does not have a substantial reduction of income tax as one of its significant purposes, such income will not be included in its foreign base company income subject to current taxation.* To secure this tax deferral privilege, an application for ruling by the Internal Revenue Service as the delegate of the Secretary is needed.

SUMMARY

Available evidence indicates that U.S. corporations do in fact use the tax deferral privilege, together with judicious selection of the local tax site and appropriate manipulation of subsidiary versus branch status, to reduce their total tax rate considerably. The International Tax Staff of Treasury Department has calculated that in 1972 U.S. tax collections on multinational corporations with controlled foreign subsidiaries could have increased by more than 30 percent if the privilege of tax deferral had been eliminated.** Viewed in another way, the average after-tax foreign earnings of U.S. corporations would have been 4 percentage points lower without the deferral. While this may seem at first glance to be only a modest tax savings, it should be noted

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* Internal Revenue Code, 954 (b)(4).

** G. Hufbauer, "A Guide to Law and Policy", in U.S. Taxation of Theoretical American Business Abroad, American Enterprise Institute, 1975.

that a small change in tax liability can imply a substantial change in the rate of return on invested capital in a heavily leveraged firm. Also, a decidedly favorable change in the after tax rate of return is highly significant for allocating internal cash flow or attracting new capital for foreign investments.

In short, deferral for foreign income creates an implicit tax advantage for foreign investment not enjoyed by domestic investment. Under deferral, the tax law basically encourages not only retainment of foreign earnings abroad but also a significant outflow of capital from the United States. Similarly, the tax incentives provided under deferral for foreign shipping income are contributive to the enormous expansion of the U.S. controlled subsidiaries' shipping operations. As a result, they are also prejudicial to investment in the shipbuilding industry within the United States. While the deferral privilege applicable to controlled foreign corporations has been further limited by the revenue laws enacted in 1975 and 1976, the historical trends cannot be easily reversed, especially in view of the existing provision that such corporations with foreign shipping income still can enjoy tax deferral on such income if it is reinvested in assets for shipping operations.

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